DEPARTMENT OF COMMERCE

Bureau of Industry and Security

15 CFR Parts 732, 734, 740, 742, 743, 744, 748, 762, 772, and 774

[Docket No. 261116–0005]

RIN 0694–AK50

Addressing Remote Access to Advanced Semiconductors

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

ACTION: Interim final rule.

SUMMARY: In this interim final rule (IFR), the Department of Commerce is establishing new rules to prevent certain foreign actors from leveraging advanced computing power based on U.S. technology to threaten U.S. national security and foreign policy interests. First, this rule establishes new restrictions which will apply for exports, reexports, or transfers (in-country) to overseas data centers that remotely supply significant volumes of compute to companies headquartered in Country Group D:5 or Macau. These restrictions will undermine the ability of companies headquartered in countries of concern from using U.S. advanced Super Intelligence (SI) semiconductors to train advanced SI models. Data centers, foreign foundries, and chip exporters are required to perform robust due diligence on their customers, including any direct or indirect ownership or control by persons in Country Group D:5 or Macau, as part of complying with this new control. The license requirement will not apply to commercial recommender systems, such as those used by online retailers or social media companies, as these functions do not pose the same national security threat. Second, in addition to the current license requirements for advanced semiconductors, a license will be required to export, reexport, or transfer (in-country) advanced semiconductors to Indonesia, Malaysia, Singapore, Thailand, or Brazil (and any additional country designated by the Secretary of Commerce, in consultation with the Secretary of State or the Assistant to the President for National Security Affairs)—countries which present a higher-than-normal risk of diversion. The license requirement for these five countries will not apply to semiconductors destined to companies headquartered in, or whose ultimate parent company is headquartered in, the United States, provided certain reporting requirements are met. Commerce will be actively monitoring for countries that tolerate evasion of this IFR and will consider a range of consequences for such countries, such as import restrictions, new license requirements on advanced semiconductor exports, downgrading the country's status in the U.S. export control regime, and Entity List designations and temporary export prohibitions for foreign persons involved in such activities. Third, this IFR amends the presumptions which front-end chips fabricators and chip packagers face when exporting advanced-node logic chips. These amendments reduce the number of pathways to overcome the presumptions for chip designers located in destinations which face a license requirement for SI chips. This change gives the U.S. government critical oversight over companies headquartered in certain countries that seek to leverage advanced semiconductor production capabilities in third countries. Finally, the IFR formally rescinds the regulations implementing the Biden-era AI Diffusion Rule. The AI Diffusion Rule has never been enforced. The regulatory changes in this rule formalize the rescission of the AI Diffusion Rule, which the Department of Commerce Bureau of Industry and Security (BIS) announced in May 2025.

DATES:

Effective date: This rule is effective November 19, 2026.

Comment due date: Comments on the revisions and additions in this rule must be received by BIS no later than January 19, 2027.

ADDRESSES: Comments on this rule may be submitted to the Federal rulemaking portal (*www.regulations.gov*). The *regulations.gov* ID for this rule is: BIS–2026–0628. Please refer to RIN 0694–AK50 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 Timothy Mooney, Director, 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*.

For technical information, contact Patrick McCartney, Director, AI, Computers, and Telecommunications Division, Bureau of Industry and Security, U.S. Department of Commerce at 202–482–0707 or by email: *patrick.mccartney@bis.doc.gov.*

SUPPLEMENTARY INFORMATION:

I. Background

In this IFR, BIS is amending the EAR (15 CFR parts 730–774) to establish new controls to ensure that computing power, based on U.S. technology located in foreign data centers, is not used in a manner contrary to U.S. national security or foreign policy interests. This IFR accomplishes this by:

- Adding an end-use control requiring a license for exports, reexports, or transfers (in-country) of advanced SI [1] items when there is ''knowledge'' the items are destined for use in data centers, wherever located, that will provide direct or indirect access to a significant volume of computing power to or for an entity headquartered in, or whose ultimate parent company is headquartered in, Macau or destination specified in Country Group D:5. License applications will be reviewed on a case-by-case basis. These changes are contained in new § 744.24(a)(1). In addition, if subsequent to the original

[1] Pursuant to Executive Order 14434, *Inaugurating the Era of Super Intelligence,* the terms ''Super Intelligence'' and ''SI'' is used in place of ''Artificial Intelligence'' or ''AI''.

export of advanced SI semiconductors to an overseas data center, that data center starts providing, directly or indirectly, significant volumes of compute to companies headquartered, or with an ultimate parent headquartered, in Macau or Country Group D:5, the owner, operator of the overseas data center, or other party making the transfer will be required to obtain a license. Any data center providing significant volume of compute power to companies headquartered, or with an ultimate parent headquartered, in Macau or Country Group D:5 prior to the publication date of this rule that wishes to continue providing these services must obtain a license with 90 days of the effective date of this IFR or face future export restrictions. However, the license requirement will not apply to 'commercial recommender systems,' such as those used by online retailers and social media companies, as these functions do not pose the same national security threat.

This new control is a logical extension of existing controls. At present, a license is required to export, reexport, or transfer (in-country) advanced SI semiconductors for entities headquartered in, or whose ultimate parent company is headquartered in, Country Group D:5 or Macau. Through this rule, BIS is imposing restrictions that will undermine those entities' ability to access significant volumes of advanced SI semiconductors remotely, including through connected cloud computing.

- Adding a destination-based license requirement for advanced SI items for destinations for which there is an unacceptable risk of diversion—which for the purposes of this IFR are Indonesia, Malaysia, Singapore, Brazil, and Thailand. See amendments to § 742.6(a)(6)(iii)(A)(*1*).
- Rescinding the worldwide Regional Stability (RS) license requirement and other regulatory changes implemented by the AI Diffusion rule, ''Framework for Artificial Intelligence Diffusion'' published January 15, 2025 (90 FR 4544) (''AI Diffusion Rule'').

By making these changes, this IFR prevents the use of certain SI items in data centers and at a computing power level that can be used for training or running of advanced SI models. Access to such computing power can be used to train and run advanced SI models capable of supporting military- and intelligence-related activities that could threaten U.S. national security or foreign policy interests, *e.g.,* using advanced SI for developing more effective weapons of mass destruction and advanced conventional weapons, coordinated cyber-espionage and targeted cyber-disruption, algorithmic theft, and weaponized disinformation.

Specifically, BIS is enhancing and streamlining the licensing policy on items controlled under Export Control Classifications Numbers (ECCNs) 3A090 and 4A090 and the corresponding .z items by using a combination of more focused and effective destination-based controls and enhanced end-use controls. This IFR amends the EAR to reflect a revision to the license review policy for these items in parts 742 (Regional stability) and 744 (Control Policy: End-User and End-Use Based) to simplify the licensing process for SI integrated circuits (ICs) and other SI-related items. The changes promulgated in this IFR follow extensive U.S. government consideration of the impact of these controls on U.S. national security and foreign policy interests.

II. License Requirements and Review Policy

Changes to § 742.6 Regional Stability

This IFR revises § 742.6 to impose new license requirements and licensing policies for advance computing items identified in paragraph (a)(6)(iii)(A).

First, under § 742.6(a)(6)(iii)(A)(*1*), a license is required for exports, reexports, or transfers (in-country) to or within Indonesia, Malaysia, Singapore, Brazil, and Thailand. As noted in section I of this preamble, these countries are being added in response to concerns that advanced computing items subject to EAR licensing requirements are being diverted to entities and countries of concern without authorization. See section III of this preamble for a discussion of those controls.

The license requirements for items described in § 742.6(a)(6)(iii)(A)(*1*) do not apply to exports, reexports, and transfers (in-country) to an ultimate consignee or end user headquartered in, or whose ultimate parent company is headquartered in, the United States, provided the reporting requirements of new § 743.10, described in section VI of this preamble, are met by the exporter, reexporter, or transferor. This is explained under new Note 1 to paragraph (a)(6)(iii)(A)(*1*) of § 742.6.

Second, under § 742.6(a)(6)(iii)(A)(*2*), this IFR amends the worldwide licensing requirement to require a license for exports, reexports, or transfers (in-country) to or within destinations specified in Country Groups D:1, D:4, and D:5, excluding destinations specified in Country Groups A:5 or A:6, as well as the United Arab Emirates—to the extent a license would otherwise be required by the final rule ''Enhanced Favorable Treatment for the United Arab Emirates Under the Export Administration Regulations'' (91 FR 43034, July 14, 2026).

For the license requirements under paragraph (a)(6)(iii)(A)(*1*) of § 742.6, applications for exports, reexports, and transfers (in-country) will be reviewed on a case-by-case basis to determine whether the transaction is contrary to the national security or foreign policy interests of the United States, as described under § 742.6(b)(10)(iii)(A)(*1*). Pursuant to § 742.6(b)(10)(iii)(A)(*1*), destinations will be evaluated on the effectiveness of their export control regimes and their coordination with BIS on the enforcement of export controls.

III. End-Use Restrictions

A. Changes to Part 744—Control Policy: End-User and End-Use Based

This IFR adds new § 744.24 Restrictions on exports, reexports, and transfers (in-country) of certain advanced computing items for use in data centers for end-uses and destinations of concern. Section 744.24 provides, in addition to the license requirements set forth elsewhere in the EAR, a prohibition on exports, reexports, or transfers (in-county) of advanced SI items without a license if, at the time of export, reexport, or transfer (in-country), you have ''knowledge'' that the item will be or is intended to be used in a data center end-use that is prohibited under paragraphs (a)(1) of § 744.24.

You may not knowingly export, reexport, or transfer (in-county) items specified in paragraph (a) of § 744.24 for use in a data center to or within any destination worldwide that will provide access to more than 12,000,000 ''aggregate TPP'' (either at one data center or through 'linked data centers' (including digitally-linked infrastructure, not just physically-linked infrastructure) to companies headquartered in, or whose ultimate parent company is headquartered in, Macau or a destination specified in Country Group D:5 in supplement no. 1 to part 740 of the EAR. 'Linked data centers' are data centers that use networking infrastructure that links two or more separate data centers together to allow physical and virtual facilities to share resources, balance workloads, and replicate data as a unified whole. This prohibition is described under § 744.24(a)(1) and the definition is provided in § 744.24(d). The term ''for an entity'' as used in this § 744.24(a)(1)

applies to instances in which there is ''knowledge'' that a data center is providing remote access to a non-D:5 customer that is in turn training SI models for, or participating in the training of SI models for, or providing SI models to a D:5 company. This control will cut off additional potential diversion pathways and evasion efforts.

These controls are necessary because providing computer power access at this level or greater will allow for training or running of advanced SI models; the Secretary of Commerce has determined that it could pose a national security and foreign policy threat to the United States when such computing power access will be provided to or for companies headquartered, or whose ultimate parent company is headquartered in, Macau or a destination specified in Country Group D:5—unless the computing power is exclusively used for commercial recommender systems. Access to advanced computing power presents significant national security and foreign policy concerns, primarily by enabling foreign countries or other entities of concern to accelerate the development of weapons of mass destruction (WMD), execute sophisticated zero-day cyberattacks on critical infrastructure, and disrupt global military balances of power—unless the computing power is exclusively used for commercial recommender systems.

Consistent with the national security and foreign policy concerns outlined in this IFR, BIS is imposing a notification and authorization requirement for subsequent changes in end-use. This requirement, provided in new paragraph (e) of § 744.24, and described in more detail further in this section, is triggered if there is a change in end-use of the items described in paragraph (a)(1) of § 744.24. In the event of such a change, a BIS authorization may be required. Relatedly, Note 1 to paragraph (a)(1) of § 744.24 provides that the prohibition applies regardless of whether the person in possession of the EAR item was a party to the transaction to the original export, reexport, or transfer (in-country), *i.e.,* the original shipment of the items to the data center. Because this EAR end-use control under § 744.24(a)(1) applies to any subsequent reexport or transfer (in-country), including changing from a non-prohibited end-use to a prohibited end-use, it is important that parties in possession of these items are aware of the need to review § 744.24(a)(1) for any subsequent reexport or transfer (in-country).

The prohibition described in paragraph (a)(1) applies regardless of whether a U.S.-origin item specified under paragraph (a) of § 744.24 has been incorporated or commingled into or with a foreign-made item. Reexporters and transferors may not rely on the *de minimis* provisions for incorporating or commingling U.S.-origin items specified under paragraph (a) of § 744.24 into foreign-made items where there is ''knowledge'' at any point in the chain from the development, production, or use of the foreign-made item that the U.S.-origin item will be used in this prohibited end-use under paragraph (a)(1) of § 744.24. This prohibition under § 744.24 is described under Note 2 to paragraph (a)(1).

Note 3 to paragraph (a)(1) describes due diligence expectations imposed on ''U.S. persons'' and foreign data centers to ensure compliance with these controls. Foreign data centers will be expected to perform robust due diligence on their customers to identify direct or indirect ownership or control by Country Group D:5 or Macau persons. This diligence will ensure that companies cannot circumvent new controls through corporate restructurings or spinoffs.

This IFR adds an ''is informed'' process under paragraph (a)(2) of § 744.24 to impose an additional prohibition on persons informed by BIS that a license is required for the export, reexport, or transfer (in-country) of specified items to certain persons or destinations, because there is an unacceptable risk of use in, or diversion to, the activities specified in paragraph (a)(1) of § 744.24. Notifications made under paragraph (a)(2) that there is an unacceptable risk of use in, or diversion to an end use specified in § 744.24 may be made either individually by specific notice or through amendment to the EAR.

As described under § 744.24(b), no license exceptions may overcome the prohibition described in paragraph (a)(2) of § 744.24, except when noted by BIS. The prohibitions under § 744.24 do not apply when the computing power access is being provided exclusively for a 'commercial recommender system' under the (b)(2) exception provided the reporting requirements described therein are followed.

Applications for licenses required by § 744.24 will be reviewed on a case-by-case basis as described under § 744.24(c).

This IFR adds paragraph (d) to define for purposes of § 744.24 the terms: 'linked data centers'; and 'commercial recommender system':

For purposes of § 744.24, 'linked data center' means a data center that uses networking infrastructure that links two or more separate data centers together that allows physical and virtual facilities to share resources, balance workloads, and replicate data as a unified whole. This includes digitally-linked infrastructure, not just physically-linked infrastructure.

For purposes of § 744.24, 'commercial recommender system' means a Super Intelligence (SI) tool exclusively designed and exclusively used to rank, filter, or suggest commercial products, services, or content to users based on user behavior, transaction history, or item attributes. This term does not include any SI system designed or used to generate novel text, image, audio, video, software, or other content in response to user inputs, or any system that incorporates such model, regardless of whether the system also performs recommendation functions.

This IFR adds paragraph (e) to impose a notification and authorization requirement for subsequent changes in end-use. New paragraph (e) specifies that for any export, reexport, or transfer made on or after November 19, 2026 without a license, *i.e.,* because the exporter, reexporter, or transferor had no ''knowledge'' that the item is for a prohibited end-use under this section and no other EAR license requirement applies, the exporter, reexporter, or transferor must inform the recipient that BIS authorization is required if the item will be transferred in-country; and that the recipient must follow the know-your-customer guidance in supplement no. 3 Part 732 of the EAR. The notification also must specify that the transferor, *e.g.,* the data center operator, must obtain authorization for this change in end-use. Changes in end-use from a non-prohibited end-use to a prohibited end-use under paragraphs (a)(1) are considered a ''transfer (in-country)'' for purposes of paragraphs (a)(1) or (2) and require an EAR authorization under § 744.24.

B. Conforming Change to 744.23 for Removal of Worldwide License Requirement in This IFR

This IFR, as described under section II of this preamble, removes the worldwide license requirement from former § 742.6(a)(6)(iii)(A). As a conforming change, this IFR makes revisions to the advanced computing items end-use control under § 744.23(a)(3) to ensure that a license will continue to be required for exports, reexports, and transfers (in-country) of these advanced computing items when such items are destined for entities headquartered in, or whose ultimate parent company is headquartered in, Country Group D:5 or Macau.

Specifically, this IFR revises § 744.23 ''Supercomputer,'' ''advanced-node integrated circuits,'' and semiconductor manufacturing equipment end-use controls under paragraph (a)(3)(i)(A) to specify that this end-use control for advanced computing items includes all advanced computing items (*e.g.,* those specified in ECCNs 3A090 (except for 3A090.c), 4A090, and related .z paragraph items). Prior to this IFR, there was an enforced license requirement under § 742.6(a)(6)(iii)(A) of the EAR that applied to all destinations outside of the United States for these advanced computing items when such items are destined to entities headquartered in, or whose ultimate parent company is headquartered in, Country Group D:5 or Macau. *See* the May 31, 2026, ''Guidance Regarding Enforcement of License Requirements for Advanced Computing Items for Entities Headquartered in Country Group D:5 and Macau'' on the BIS website at *http://www.bis.gov.* With the removal of the worldwide license requirement this IFR makes a required conforming change to return the license requirement for these advanced computing items to § 744.23(a)(3)(i)(A).

For § 744.23(a)(3)(i)(A), BIS has received inquiries regarding the meaning of the phrase ''for an entity'' that is headquartered in, or whose ultimate parent company is headquartered in, either Macau or a destination specified in Country Group D:5. As stated in BIS's October 2023 Advanced Computing/Supercomputing (''AC/S'') IFR (88 FR 73458) this control was intended to ensure that the national security and foreign policy objectives of the October 7, 2022 IFR and the AC/S IFR are not undermined by Macau, the People's Republic of China (PRC), or other Country Group D:5 headquartered entities setting up cloud servers or data centers in other countries to allow these entities of concern to continue to train their SI models in ways that would be contrary to U.S. national security and foreign policy interests. This end-use control thus is not, and has never been limited only to exports, reexports, and transfers (in-country) destined to such entities of concern as ultimate consignees or end users, but extends to exports, reexports, or transfers (in-country) *on behalf of* these entities of concern, *e.g.,* if an entity of concern was the purchaser in the transaction (directly or indirectly) or was the exclusive or primary (greater than 50 percent of total compute) remote end user of the data center computing capacity. Exporters, reexporters, and transferors are encouraged to examine both end-use controls in § 744.23(a)(3) and in new § 744.24 to the extent their transactions involve exports, reexports, or transfers to data centers outside of the United States where there is knowledge that a company headquartered in, or whose ultimate parent is headquartered in, Macau or D:5 will be an intended remote end user. Any entities in violation of this requirement should submit a voluntary self-disclosure (see Section 764.5 of the EAR). Bona fide operators of data centers who are otherwise engaged in activities consistent with the EAR and were providing remote access used for 'commercial recommender systems' (as defined in the new § 744.24(d)(1)) may continue providing these services for 90 days, but must obtain a license following expiration of this period to continue these services. Finally, § 744.23(a)(3)(i)(C) is added to create a license requirement for ''applicable advanced node integrated circuits'' that are subject to the EAR, specified in 3A090.a, designed by a company that is neither an approved IC designer (specified in supplement no. 6 to part 740) or an authorized IC designer (as described in Note 1 to 3A090.a), and exported, exported from abroad, reexported, or transferred (in-country) by a ''front end fabricator'' or ''OSAT'' to or within any destination. This addition ensures that a license requirement continues to apply to ''front end fabricators'' and ''OSATs'' creating advanced ICs for non-approved, non-authorized IC designers wherever located. Additionally, the presumption created in Note 1 to 3A090.a continues to apply but can be overcome by the ''front end fabricator'' or ''OSAT'' if they follow the due diligence steps specified in that note. BIS notes that the inclusion of the phrase ''exported from aboard'' in this new paragraph is simply descriptive and not intended to indicate that the activity of exporting from destinations other than the United States is not captured in provisions of the EAR where that phrase is omitted.

IV. Rescinded Provisions of the AI Diffusion Rule

A. Revoking Model Weights Controls

This IFR revokes the controls on model weights published in the AI Diffusion Rule. BIS has determined that a more effective approach to address national security and foreign policy concerns that arise from the transfer of model weights is through the use of specified destination-based or end-use license requirements. Accordingly, ECCN 4E091 is removed from the CCL in supplement no. 1 to part 774. This IFR also makes the necessary conforming changes to other parts of the EAR to remove references to ECCN 4E091 and model weights by: (1) removing Red Flag 28 in supplement no. 3 to part 732; (2) removing the AI Model weights Foreign Direct Product (FDP) rule in § 734.9; (3) removing reference to 4E091 from § 740.2; (4) removing the RS license requirement text that applies to AI model weights in § 742.6; (5) removing 748.3(f); and (6) removing the definition of ''Model Weights'' in § 772.1.

B. Removing Country Tiers, Data Center VEUs, and Related Regulatory Language

This IFR revokes the tiers of countries created in the AI Diffusion Rule and the final rule for ''Expansion of Validated End User Authorization: Data Center Validated End User Authorization,'' 89 FR 80080 (Oct. 2, 2024), which were implemented through License Exception Artificial Intelligence Authorization (AIA) in § 740.27, supplement no. 5 to part 740, the Data Center Validated End-Users (VEU) Authorization in § 748.15 and supplement no. 8 to part 748 (including reverting the reference to General VEU Authorization to use VEU Authorization wherever the term is used).

Specifically, this IFR removes License Exception AIA from the EAR by: (1) removing reference to this license exception in § 740.2; (2) reserving § 740.27 for future use; (3) removing supplement no. 5 to part 740; and (4) removing AIA from ECCNs in supplement no. 1 to part 774 when listed in the list-based license exceptions section. This IFR removes the Data Center VEU Authorization from § 748.15, supplement no. 8 to part 748, and supplement no. 10 to part 748. This IFR also makes conforming changes to the license review policy in § 742.6 to remove references to supplement no. 5 to part 740.

C. Conforming Changes Due to the Recission of the AI Diffusion Rule

(1) Removing License Exceptions AIA from § 740.2 Restrictions on all License Exceptions;

(2) Removing License Exceptions Artificial Intelligence Authorization (AIA) (§ 740.27) and License Exception Low Processing Performance (LPP) (§ 740.29) from the EAR;

(3) Removing references to the revoked License Exceptions AIA and LPP (formerly in § 740.27 and § 740.29) and adding the notification and authorization requirements in the new § 744.24 in § 762.2 Records to be retained; and

(4) Removing references to the revoked License Exceptions AIA, and LPP (formerly in § 740.27 and § 740.29) from the CCL.

D. Foreign-Direct Product Rules

BIS is retaining the worldwide destination scope of the advanced computing foreign direct product (FDP) rule in § 734.9(h)(2)(i) if there is ''knowledge'' that a foreign-produced item is destined worldwide or will be incorporated into any ''part,'' ''component,'' ''computer,'' or ''equipment'' not designated EAR99 to any location worldwide. Retention of this provision ensures the prohibitions of relevant controls are not otherwise limited.

Though BIS is not making any changes to § 734.9(h), BIS notes that the agency has received questions about the application of that paragraph. Consistent with the robust controls implemented in this IFR, BIS notes that provision's expansive application. If a foreign-produced product is subject to the EAR pursuant to § 734.9(h), BIS retains jurisdiction of that item after its incorporation into another foreign-produced item, as provided by the text of § 734.9(h)(2)(i). For example, if an ECCN 3A090 IC is incorporated into a foreign-produced ''part,'' ''component,'' ''computer,'' or ''equipment'' (such as a GPU board or server), BIS continues to have jurisdiction over the IC and license requirements may apply to the export, reexport, or transfer (in-country) of the IC (and by extension, the server). Generally, BIS does not retain jurisdiction over items after incorporation into other items, absent the applicability of the EAR's *de minimis* provisions. But in this context, specifically, in the relevant ECCN entries (ECCN 4A090 and those ECCNs with a .z paragraph), the CCL notes that such items only meet the specifications for those ECCNs if they contain an ECCN 3A090 IC. Thus, even third parties who only receive a 4A090 item are on notice that such items contain an ECCN 3A090 IC. Furthermore, the retention of BIS's jurisdiction under § 734.9(h) after incorporation is reflected by past BIS guidance to inform parties in the supply chain of the applicability of the FDP rule, including the Model Certification for Purposes of the FDP Rule of supplement no. 1 to part 734 of the EAR.

In addition, consistent with the removal of ECCN 4E091, this IFR removes the AI Model weights FDP rule in § 734.9(l).

E. License Exception Advanced Compute Manufacturing ACM

BIS is retaining License Exception ACM under § 740.28 due to the benefits this license exception plays in supporting the supply chains of export, reexports, and transfers (in-country) of advanced SI items destined to ultimate end users outside of Macau or destinations in Country Group D:5.

V. Amendments to the Presumptions Faced by Front-End Fabricators and OSAT Companies

This IFR also changes the presumptions faced by front-end fabricators and OSAT companies defined in Note 1 to 3A090.a. Specifically, paragraphs b. and c. of Note 1 to 3A090.a are amended to remove eligibility to overcome the presumption in Note 1 to 3A090.a for an integrated circuit designer located in or having an ultimate parent headquartered in a destination specified in Country Groups D;1, D:4, or D:5 of supplement no. 1 to part 740 of the EAR or in paragraph (a)(6)(iii)(A)(1) of § 742.6. Such companies which are not Authorized or Approved IC designers and face a presumption that their IC is 3A090.a for all ''applicable advanced logic integrated circuits''. This addresses potential diversion pathways of advanced ICs.

VI. Conforming Changes

In addition to the changes described in Sections II and III, this IFR makes conforming changes to the EAR due to the changes described in this preamble.

A. Revisions to Part 743

For a transaction to be excluded from the license requirements of § 742.6(a)(6)(iii)(*1*), the exporter, reexporter, or transferor must comply with the reporting requirement introduced by this IFR in new § 743.10 Reporting Requirements to Qualify for Exclusion from Certain Regional Stability Requirements. The reporting requirement mitigates the risk that transactions excluded from this license requirement will be used or diverted contrary to the EAR by allowing the U.S. Government to monitor the items being exported, reexported, or transferred (in-country).

New § 743.10 describes in paragraph (b) the information to be included in the report; in paragraph (c), where to submit the report; in paragraph (d), the timeframe as to when reporting is required; and in paragraph (e), contacts for general information or questions about this report.

B. Addition to Part 772

In addition to removing the definition for ''model weights'' described in section IV.A. of this preamble, this IFR adds a definition to § 772.1 for ''Aggregate TPP'' to describe the sum TPP of a group of ICs or commodities.

C. Revisions to the CCL

Due to the revisions to the RS reason for control under § 742.6 made in this IFR, conforming revisions are made to ECCNs: 3A001, 3A090, 3D001, 3E001, 4A003, 4A004, 4A005, 4A090, 4D001, 4D090, 4E001, 5A002, 5A992, 5A004, 5D002, 5E002, 5E992, and 5D992. For these ECCNs, the reason for control table is revised by removing references to items paragraphs 3A090.a and .b, 4A090.a and .b, and the corresponding .z paragraphs. Additionally, the reference to the worldwide RS license requirement in the control tables is revised with a new reference that a license is required to or within any destination specified in § 742.6(a)(6)(iii)(A) of the EAR.

Savings Clause

For the changes being made in this IFR, shipments of items removed from eligibility for a License Exception or export, reexport, or transfer (in-country) without a license (NLR) as a result of this regulatory action that were en route aboard a carrier to a port of export, reexport, or transfer (in-country), on November 19, 2026, pursuant to actual orders for export, reexport, or transfer (in-country) to or within a foreign destination, may proceed to that destination under the previous eligibility for a License Exception or export, reexport, or transfer (in-country) without a license (NLR), provided the export, reexport, or transfer (in-country) is completed no later than on December 21, 2026.

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 Export Control Reform Act of 2018 (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 IFR. In particular, and as noted elsewhere, Section 1753 of ECRA (50 U.S.C. 4812) authorizes the regulation of exports, reexports, and transfers (in-country) of items subject to U.S. jurisdiction. Further, Section 1754(a)(1)–(16) of ECRA (50 U.S.C. 4813(a)(1)–(16)) authorizes, *inter alia,* the establishment of a list of controlled items; the prohibition of unauthorized

exports, reexports, and transfers (in-country); the requirement of licenses or other authorizations for exports, reexports, and transfers (in-country) of controlled items; apprising the public of changes in policy, regulations, and procedures; and any other action necessary to carry out ECRA that is not otherwise prohibited by law. Pursuant to Section 1762(a) of ECRA (50 U.S.C. 4821(a)), these changes can be imposed in an IFR without prior notice and comment.

Rulemaking Requirements

1. BIS has examined the impact of this rule as required by Executive Orders (E.O.) 12866 and 13563, which 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 (*e.g.,* potential economic, environmental, public, health, and safety effects, distributive impacts, and equity). Pursuant to E.O. 12866, this rule has been determined to be not significant. This rule is exempt from the requirements of E.O. 14192 because it is being issued with respect to a national security function of the United States, per section 5(a) of E.O. 14192.

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. This rule involves the following OMB-approved collections under control numbers 0694–0088, ''Multi-Purpose Application;'' 0694–0096, ''Five Year Records Retention Period;'' 0694–0096, ''Advance Computing Items License Requirement Exclusion Submissions and Forms;'' and 0607–0152, ''Automated Export System (AES) Program.''

For OMB control number 0694–0088, *Simple Network Application Process and Multipurpose Application Form.* BIS expects an annual increase of approximately 100 licenses for an increase in burden in 50 burden hours per year for this collection with an estimated cost increase of $1,900. BIS believes that this increase in burden falls within the already approved amounts for this existing collection.

Changes impacting OMB control numbers 0694–0096, and 0607–0152 *Five Year Records Retention Period* and *Automated Export System (AES) Program,* respectively, are not expected to result in a change in burden hours.

With this rule, BIS has requested emergency approval of revisions of an existing collection of information OMB Control Number 0694–0137, ''License Exceptions and Other Authorizations. BIS expects a net annual increase of approximately 970 submissions for an increase in burden of 440 burden hours for this collection with an estimated cost increase of $16,720, which takes into account the increase of reporting required under new § 743.10 and the reduction of recordkeeping and reporting eliminated with the removal of License Exceptions Artificial Intelligence Authorization (AIA) (§ 740.27) and License Exception Low Processing Performance (LPP) (§ 740.29) from the EAR. BIS expects the burden hours for this collection to fall within the already approved amounts for this existing collection. Upon approval of these emergency revisions, BIS will publish a separate 60 day notice requesting comment.

BIS invites comments as part of this rulemaking on if these collections of information are necessary and whether they will have practical utility; whether our estimate of the public burden of this collection of information is accurate and based on valid assumptions and methodology; and ways to enhance the quality, utility, and clarity of the information to be collected. Current information regarding all of these collections of information—including all background materials—can be found at *https://www.reginfo.gov/public/do/PRAMain* by using the search function to enter either the title of the collection or the OMB Control Number.

3. This rule does not contain policies with federalism implications as that term is defined in Executive Order 13132.

4. Pursuant to section 1762 of the Export Control Reform Act of 2018, this action is exempt from the Administrative Procedure Act (5 U.S.C. 553) requirements for notice of proposed rulemaking, opportunity for public participation, and delay in effective date.

5. 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 Parts 732 and 740

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

15 CFR Part 734

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

15 CFR Part 742

Exports, Terrorism.

15 CFR Part 743

Administrative practice and procedure, Reporting and recordkeeping requirements.

15 CFR Part 744

Exports, Reporting and recordkeeping requirements, Terrorism.

15 CFR Part 748

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

15 CFR Part 762

Administrative practice and procedure, Business and industry, Confidential business information, Exports, Reporting and recordkeeping requirements.

15 CFR Part 772

Exports.

15 CFR Part 774

Exports, Reporting and recordkeeping requirements.

For the reasons stated in the preamble, BIS amends 15 CFR parts 732, 734, 740, 742, 743, 744, 748, 762, 772, and 774 as follows:

PART 732—STEPS FOR USING THE EAR

■ 1. The authority citation for part 732 is revised to read as follows:

Authority: 50 U.S.C. 4801–4852; 50 U.S.C. 1701 *et seq.;* E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228.

Supplement No. 3 to Part 732 [Amended]

■ 2. Amend supplement no. 3 to part 732 by removing and reserving paragraph 28 under ''Red Flags.''

PART 734—SCOPE OF THE EXPORT ADMINISTRATION REGULATIONS

■ 3a. 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. E.O. 13637, 78 FR 16129, 3 CFR, 2014 Comp., p. 223; Notice of November 7, 2024, 89 FR 88867 (November 8, 2024).

§ 734.9 [Amended]

■ 3b. Amend § 734.9 by removing paragraph (l).

PART 740—LICENSE EXCEPTIONS

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

Authority: 50 U.S.C. 4801–4852; 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.

■ 5. Amend § 740.2 by revising paragraph (a)(9)(ii) to read as follows:

§ 740.2 Restrictions on all License Exceptions.

* * * * *

(a) * * *

(9) * * *

(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 a destination specified in § 742.6(a)(6)(iii)(A), excluding the United Arab Emirates, or to an entity headquartered in or whose ultimate parent company is headquartered in, Macau or a destination specified in Country Group D:5, wherever located, and the license exception is other than: TMP, restricted to eligibility under the provisions of § 740.9(a)(6); NAC/ACA, under the provisions of § 740.8; RPL, under the provisions of § 740.10; GOV, restricted to eligibility under the provisions of § 740.11(b); TSU under the provisions of § 740.13(a) and (c); HBM under the provisions of § 740.25; or ACM under the provisions of § 740.28. 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) An integrated circuit, ''electronic assembly'' or ''component'' or related software or technology specified in ECCNs 3A001.z.4; 3D001 (for ''software'' for commodities controlled by 3A001.z.4, 3A090); 3E001 (for ''technology'' for commodities controlled by 3A001.z.4); 4A003.z; 4A004.z; 4A005.z; 4D001 (for ''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z); and 4E001 (for ''technology'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z); 5A002.z; 5A004.z; 5A992.z; 5D002.z; 5D992.z; 5E002 (for ''technology'' for commodities controlled by 5A002.z or 5A004.z); ''software'' specified by 5D002 (for 5A002.z or 5A004.z commodities)); 5E992 (for ''technology'' for commodities controlled by 5A992.z or ''software'' controlled by 5D992.z).

Note 1 to paragraph (a)(9)(ii): *ECCN 3A090.c requires a license for exports, reexports, and transfers (in-country) to or within Macau or destinations specified in Country Group D:5, but is still included within the scope of this paragraph because it generally shares the same EAR license exception eligibility as other 3A090 commodities, except for NAC/ACA, under the provisions of § 740.8, for which ECCN 3A090.c is not eligible. An export, reexport, or transfer (in-country) of an ECCN 3A090.c commodity to a destination specified in Country Groups D:1 or D:4 that is not specified in Country Group D:5, may be made under the No License Required (NLR) designation, provided no part 744 or 746 license requirements are applicable.*

* * * * *

§ 740.27 [Removed and Reserved]

■ 6. Remove and reserve § 740.27.

§ 740.29 [Removed and Reserved]

■ 7. Remove and reserve § 740.29.

Supplement No. 5 to Part 740 [Removed and Reserved]

■ 8. Remove and reserve supplement no. 5 to part 740.

PART 742—CONTROL POLICY—CCL BASED CONTROLS

■ 9. 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.

■ 10. Section 742.6 is amended by:
■ a. Revising paragraph (a)(6)(iii)(A);
■ b. Adding paragraphs (a)(6)(iii)(A)(*1*) and (*2*);
■ c. Removing and reserving paragraph (a)(6)(iii)(B);
■ d. Removing paragraph (a)(13);
■ e. Revising paragraphs (b)(10)(iii)(A)(*1*), and (b)(10)(iii)(A)(*2*);
■ f. Removing and reserving paragraph (b)(10)(iii)(B); and
■ g. Removing paragraphs (b)(10)(iii)(C) and (b)(14).

The revisions to read as follows:

§ 742.6 Regional stability.

(a) * * *

(6) * * *

(iii) * * *

(A) A license is required for items specified in ECCNs 3A001.z; 3A090 (except for 3A090.c); 3D001 (for ''software'' for commodities controlled by 3A001.z, 3A090 (except for 3A090.c)); 3E001 (for ''technology'' for commodities controlled by 3A001.z, 3A090 (except for 3A090.c)); 4A003.z; 4A004.z; 4A005.z; 4A090; 4D001 (for ''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z); 4D090 (for ''software'' for commodities controlled by 4A090); 4E001 (for ''technology'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z, 4A090 or ''software'' specified by 4D001 (for 4A003.z, 4A004.z, and 4A005.z), 4D090 (for ''software'' for commodities controlled by 4A090)); 5A002.z; 5A004.z; 5A992.z; 5D002.z; 5D992.z; 5E002 (for ''technology'' for commodities controlled by 5A002.z or 5A004.z or ''software'' specified by 5D002 (for 5A002.z or 5A004.z commodities)); or 5E992 (for ''technology'' for commodities controlled by 5A992.z or ''software'' controlled by 5D992.z) for exports, reexports, and transfers (in-country) to or within the destinations specified under paragraphs (a)(6)(iii)(A)(*1*)–(*2*).

(*1*) Indonesia, Malaysia, Singapore, Brazil, and Thailand.

Note 1 to paragraph (a)(6)(iii)(A)(1): *The license requirements in this paragraph (a)(6)(iii)(A)(1) do not apply to exports, reexports, and transfers (in-country) to an ultimate consignee or end user headquartered in, or whose ultimate parent company is headquartered in, the United States, provided the exporter, reexporter, or transferor follows the reporting requirements in § 743.10 Reporting Requirements to Qualify for Exclusion from Certain Regional Stability License Requirements.*

(*2*) A destination in Country Groups D:1, D:4, or D:5 (excluding destinations also specified in Country Groups A:5 or A:6) or the United Arab Emirates, except that a license is not required when the ultimate consignee and all end users are approved entities in the United Arab Emirates listed in supplement no. 8 to part 740 and specified as approved to receive the items covered by this paragraph.

(B) [Reserved]

* * * * *

(iii) * * *

(A) * * *

(*1*) License review policy for paragraph (a)(6)(iii)(A)(*1*). Applications for exports, reexports, and transfers (in-country) will be reviewed on a case-by-case basis to determine whether the transaction is contrary to the national security or foreign policy interests of the United States, to include the effectiveness of a destination's export control regimes and coordination with BIS on the enforcement of export controls.

(*2*) Policy for Country Groups D:1, D:4, D:5 and the United Arab Emirates. There is a case-by-case license review policy for license applications for

exports of commodities with a TPP (as defined in Technical Note 2 to 3A090.a and 3A090.b) less than 21,000, and a 'total DRAM bandwidth' (as defined in the notes to paragraph (dd)(1) in supplement no. 2 to part 748) less than 6,500 GB/s, when destined to end-users located in China or Macau, provided the applicant provides the additional information described in supplement no. 2 to part 748 under paragraph (dd). All other applications for exports, reexports, or transfers (in-country) to or within Country Group D:5 and Macau or for an entity headquartered or with an ultimate parent headquartered in Country Group D:5 or Macau will be reviewed under a presumption of denial. All other applications to or within destinations specified in Country Groups D:1 and D:4 (excluding any destinations also specified in Country Groups A:5 or A:6) and the United Arab Emirates will be reviewed under a presumption of approval. If the license application meets the criteria of more than one licensing policy, then this licensing policy and its requirements will be applied.

(B) [RESERVED]

* * * * *

PART 743—SPECIAL REPORTING AND NOTIFICATION

■ 11. The authority citation for part 743 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. 13637, 78 FR 16129, 3 CFR, 2014 Comp., p. 223; 78 FR 16129.

■ 12. Add § 743.10 to read as follows:

§ 743.10 Reporting requirements to qualify for exclusion from certain regional stability license requirements.

(a) *Scope.* This section describes reporting which is required to qualify for an exclusion from the Regional Stability license requirement under § 742.6(a)(6)(iii)(A)(*1*). Pursuant to Note 1 to paragraph (a)(6)(iii)(A)(*1*), the license requirements in § 742.6(a)(6)(iii)(A)(*1*) do not apply to exports, reexports, and transfers (in-country) to an ultimate consignee or end user headquartered in, or whose ultimate parent company is headquartered in, the United States, provided the exporter, reexporter, or transferor follows the reporting requirements of this section.

(b) *Information to be included in the reports.* The following information specified under paragraph (b)(1) through (4) of this section must be included in each report to BIS.

(1) Information on each of the parties, as described in § 748.5, involved in the transaction as well as the ultimate parent(s) of the ultimate consignee and end user, including:

(i) Name;

(ii) Physical address;

(iii) Mailing address (if different from physical address);

(iv) Phone number;

(v) Information in paragraphs (b)(1)(i) through (iv) for all parent company headquarters and specifying which company is the ultimate parent; and

(vi) The role(s) each party is playing in the transaction (*i.e.,* exporter, reexporter, transferor, end-user, ultimate consignee, or ultimate parent of the ultimate consignee or end-user).

(2) The ultimate destination of the commodities being exported, reexported or transferred (in-country) and any ''end-users'' of the commodity which are not the ultimate consignee.

(3) Information for each product being exported, exported from abroad, reexported, or transferred (in-country) including:

(i) ECCN, including the item's paragraph-level classification; *e.g.,* 3A090.a;

(ii) Product name and SKU;

(iii) Total processing performance (TPP) of the product (see the Technical Notes to ECCN 3A090); and

(iv) Quantity of each product.

(4) Date of export, reexport, or transfer (in-country) for each commodity described in paragraph (b)(3).

(c) *Where to submit reports required under this section.* Notifications to BIS under this section must be submitted to BIS using the following URL: *https://www.bis.gov/ai/exclusionnotesubmission.*

(d) *Monthly reporting requirement.* You must submit monthly reports regarding any transactions subject to the provisions of this section. The report shall cover any exports, reexports, or transfers (in-country) that qualify for an exclusion from the Regional Stability license requirement pursuant to Note 1 to § 742.6(a)(6)(iii)(A)(*1*) on or after November 19, 2026. Reports regarding any export, reexport, or transfer (in-country) subject to the provisions of this section are due no later than the first business day of the month following the transaction.

(e) *Contacts.* General information or questions about these reports can be directed to the Office of National Security Controls, tel. (202) 482–0092, or email: *EAR.Reports@bis.doc.gov.*

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

■ 13. 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.

■ 14. Amend § 744.1 by adding a sentence at the end of paragraph (a)(1) to read as follows:

§ 744.1 General provisions.

(a) * * *

(1) * * * Section 744.24 sets forth restrictions on exports, reexports, and transfers (in-country) for an item that will be or is intended to be used in a data center for end users and destinations of concern.

* * * * *

■ 15. Revise § 744.23(a)(3)(i) to read as follows:

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

(a)

* * * * *

(3) * * * (i)(A) Any item subject to the EAR and specified in ECCN 3A001.z; 3A090 (except for 3A090.c); 4A003.z; 4A004.z; 4A005.z; 4A090; 5A002.z; 5A004.z; 5A992.z, 5D002.z; 5D992.z destined to any destination other than those specified in Country Groups D:1, D:4, or D:5 (excluding any destination also specified in Country Groups A:5 or A:6) for an entity that is headquartered in, or whose ultimate parent company is headquartered in, either Macau or a destination specified in Country Group D:5 (*e.g.,* a PRC-headquartered cloud or data server provider located outside of Country Groups D:1, D:4, or D:5 (excluding any destination also specified in Country Groups A:5 or A:6)).

(B) Any item subject to the EAR and specified in ECCN 3A090.c destined to any destination other than Macau or those specified in Country Group D:5, for an entity that is headquartered in, or whose ultimate parent company is headquartered in, either Macau or a destination specified in Country Group D:5.

(C) An ''applicable advanced logic integrated circuit'' that is subject to the EAR, specified in 3A090.a, designed by a company that is neither an approved IC designer (specified in supplement no. 6 to part 740) nor an authorized IC designer (as described in Note 1 to

3A090.a), and exported, exported from abroad, reexported, or transferred (in-country) by a ''front end fabricator'' or ''OSAT'' to or within any destination.

* * * * *

■ 16. Add § 744.24 to read as follows:

§ 744.24 Restrictions on exports, reexports, and transfers (in-country) of certain advanced computing items for use in data centers for end-uses and destinations of concern.

(a) *General prohibition*—(1) *Prohibition on exports, reexports, or transfers (in-country) for certain advanced computing items for use in data centers for end uses of concern.* In addition to the license requirements set forth elsewhere in the EAR, you may not export, reexport, or transfer (in-county) items specified in ECCNs 3A001.z; 3A090 (except for 3A090.c); 3D001 (for ''software'' for commodities controlled by 3A001.z, 3A090 (except for 3A090.c)); 3E001 (for ''technology'' for commodities controlled by 3A001.z, 3A090 (except for 3A090.c)); 4A003.z; 4A004.z; 4A005.z; 4A090; 4D001 (for ''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z); 4D090 (for ''software'' for commodities controlled by 4A090); 4E001 (for ''technology'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z, 4A090 or ''software'' specified by 4D001 (for 4A003.z, 4A004.z, and 4A005.z), 4D090 (for ''software'' for commodities controlled by 4A090)); 5A002.z; 5A004.z; 5A992.z; 5D002.z; 5D992.z; 5E002 (for ''technology'' for commodities controlled by 5A002.z or 5A004.z or ''software'' specified by 5D002 (for 5A002.z or 5A004.z commodities)); or 5E992 (for ''technology'' for commodities controlled by 5A992.z or ''software'' controlled by 5D992.z) without a license if you have ''knowledge'' at the time of the export, reexport, or transfer (in-country) that the item is destined to a data center to or within any destination worldwide that is providing or will provide access to more than 12,000,000 ''aggregate TPP'' either at one data center or through 'linked data centers' to or for companies headquartered in, or whose ultimate parent company is headquartered in, Macau or a destination specified in Country Group D:5 in supplement no. 1 to part 740 of the EAR.

Note 1 to paragraph (a)(1): *The prohibitions pursuant to paragraph (a)(1) apply regardless of whether the person in possession of the EAR item was a party to the transaction to the original export, reexport, or transfer (in-country) (see § 748.5).*

Note 2 to paragraph (a)(1): *The prohibitions pursuant to paragraph (a)(1) apply regardless of whether a U.S.-origin item specified under paragraph (a) of this section has been incorporated or commingled into or with a foreign-made item. Reexporters and transferors may not rely on the de minimis provisions for incorporating or commingling U.S.-origin items specified under paragraph (a) into foreign-made items where there is ''knowledge'' at any point in the chain from the ''development'', ''production'', or ''use'' of the foreign-made item that incorporates or commingles a U.S.-origin item will be used in a prohibited end-use under paragraph (a)(1) of this section.*

Note 3 to paragraph (a)(1): *To satisfy the requirement that you do not have ''knowledge'' for purposes of this paragraph, you will be expected to obtain and be able to provide sufficient information from the foreign data center regarding that data center's ''know your customer'' due diligence checks. Such diligence checks will include diligence on whether any data center customers are subject to direct or indirect ownership or control by persons located in, headquartered in, or whose ultimate parent is headquartered in, Macau or a destination specified in Country Group D:5. A foreign data center declining or being unable to provide information sufficient to verify compliance with this end use control shall be considered a red flag that presumptively provides you with ''knowledge'' unless you are able to resolve that red flag before proceeding with the transaction.*

(2) *Additional prohibition on persons informed by BIS.* BIS may inform persons, either individually by specific notice or through amendment to the EAR, that a license is required for the export, reexport, or transfer (in-country) of specified items to certain persons or destinations, because there is an unacceptable risk of use in, or diversion to, the activities specified in paragraph (a)(1) of this section. Specific notice is to be given only by, or at the direction of the Secretary of Commerce or the Under Secretary of Commerce for Industry and Security. When such notice is provided orally, it will be followed by a written notice within two working days signed by the Secretary of Commerce or the Under Secretary of Commerce for Industry and Security. However, the absence of any such notification does not excuse persons from compliance with the license requirements of paragraphs (a)(1) of this section. The Secretary of State or the Assistant to the President for National Security Affairs may notify the Secretary of Commerce that a certain destination is at high risk of use in, or diversion to, the activities specified in paragraph (a)(1) of this section. Within 10 days of receipt of such notice, the Secretary of Commerce shall, if he deems it appropriate, inform persons, either individually by specific notice or through amendment to the EAR, that a license is required for the export, reexport, or transfer (in-country) of specific items to that destination.

(b) *Exceptions.* (1) No license exceptions may overcome the prohibition described in paragraph (a) of this section, except as noted by BIS when a destination is designated under paragraphs (3) of this section.

(2) The prohibitions under this section do not apply when the computing power access is only being provided for a 'commercial recommender system' and you submit the following information to *https://www.bis.gov/ai/exclusionnote submission,* which will be shared with the End User Review Committee.

(i) The name of the company headquartered in, or whose ultimate parent company is headquartered in, Macau or a destination specified in Country Group D:5 in supplement no. 1 to part 740 of the EAR.

(ii) The sum of the total processing performance (TPP, as defined in the Technical Notes to ECCN 3A090) of all of the ICs or commodities specified in paragraph (a)(1) provided to or for the company specified in (b)(2)(i).

(iii) The due diligence performed to ensure the computing power access is exclusively being provided for a 'commercial recommender system.' (3) Any data center providing significant volume of compute power to companies headquartered, or with an ultimate parent headquartered, in Macau or Country Group D:5 prior to the publication date of this rule that wishes to continue providing these services must obtain a license with 90 days of the effective date of this IFR or face future export restrictions.

(c) *License review policy.* Applications for licenses required by this section will be reviewed on a case-by-case basis.

(d) *Definitions.* For purposes of this section, the following definitions are applicable:

(1) *Commercial recommender system.* A commercial recommender system means a Super Intelligence (SI) tool exclusively designed and exclusively used to rank, filter, or suggest commercial products, services, or content to users based on user behavior, transaction history, or item attributes. This term does not include any SI system designed or used to generate novel text, image, audio, video, software, or other content in response to user inputs, or any system that incorporates such model, regardless of whether the system also performs recommendation functions.

(2) *Linked data center.* For purposes of this section, a 'linked data center' means a data center that uses networking infrastructure that links two or more separate data centers together, through digitally-linked or physically-linked infrastructure, that allows physical and virtual facilities to share resources, balance workloads, and replicate data as a unified whole. 'Linked data center' includes digitally-linked infrastructure, not just physically-linked infrastructure.

(e) *Notification and authorization requirement for subsequent changes in end-use.* For any export, reexport, or transfer made on or after November 19, 2026 without authorization, *i.e.,* because the exporter, reexporter, or transferor had no ''knowledge'' that the item is for a prohibited end-use under this section and no other EAR license requirement applies, the exporter, reexporter, or transferor must inform the recipient that a BIS authorization is required if the item or items will be used at a data center to provide access to more than 12,000,000 ''aggregate TPP'' either at one data center or through 'linked data centers' to or for companies headquartered in, or whose ultimate parent company is headquartered in, Macau or a destination specified in Country Group D:5 in supplement no. 1 to part 740 of the EAR. The notification from the exporter, reexporter, or transferor must also specify that the transferor, *e.g.,* the data center operator, must obtain authorization for this change in end-use. The notification from the exporter, reexporter, and transferor must also specify that the transferor must follow the know-your-customer guidance in supplement no. 3 Part 732 of the EAR.

PART 748—APPLICATIONS (CLASSIFICATION, ADVISORY, AND LICENSE) AND DOCUMENTATION

■ 17. The authority citation for part 748 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. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228.

§ 748.3 [Amended]

■ 18. Amend § 748.3 by removing paragraph (f).

■ 19. Amend § 748.15 by:

■ a. Revising the introductory text and paragraphs (a)(1);

■ b. Removing and reserving paragraph (b)(2);

■ c. Revising paragraph (c)(1);

■ d. Removing and reserving paragraphs (c)(2) and (d)(2);

■ e. Revising paragraphs (e) and (f)(1)(i);

■ f. Removing and reserving paragraph (f)(1)(ii); and

■ g. Revising paragraphs (f)(1)(iii) and (f)(1)(iv), (f)(2), (g), (h), and (i).

The revisions read as follows:

§ 748.15 Authorization Validated End-User (VEU).

VEU Authorization permits the export, reexport, and transfer (in-country) to validated end-users of any eligible items that will be used in a specific eligible destination. Reexports by a VEU require separate authorization. Validated end-users are those who have been previously approved by BIS pursuant to the requirements of this section. To be eligible for authorization VEU, exporters, reexporters, and validated end-user applicants must adhere to the conditions and restrictions set forth in paragraphs (a) through (f) of this section. If a request for VEU authorization for a particular end-user is not granted, no new license requirement is triggered. In addition, such a result does not render the end-user ineligible for license approvals from BIS.

(a)(1) *Eligible end users for VEU Authorization.* The only end users to whom eligible items may be exported, reexported, or transferred (in-country) under a VEU Authorization are those validated end users identified in supplement no. 7 to part 748, according to the provisions in this section and those set forth in supplement nos. 8 and 9 to this part that have been granted VEU status by the End-User Review Committee (ERC) according to the process set forth in supplement no. 9 to this part.

(2) *Requests for authorizations.* To apply for a VEU Authorization, requests for authorization must be submitted in the form of an advisory opinion request, as described in § 748.3(c), and must include a list of items (items for purposes of authorization VEU include commodities, software, and technology, except as excluded by paragraph (c) of this section), identified by ECCN, that exporters, reexporters, or transferors intend to export, reexport, or transfer (in-country) to an eligible end user, once approved. To ensure a thorough review, requests for VEU authorization must include the information described in supplement no. 8 to this part. Requests for authorization will be accepted from exporters, reexporters, transferors, or end-users. Submit the request to: The Office of Exporter Services, Bureau of Industry and Security, U.S. Department of Commerce, 14th Street and Pennsylvania Avenue NW, Room 2099B, Washington, DC 20230. Mark the package ''Request for ''General'' Authorization Validated End-User.''

* * * * *

(c) * * *

(1) Items controlled under the EAR for missile technology (MT) and crime control (CC) reasons may not be exported or reexported under a VEU Authorization.

* * * * *

(e) *Certification and recordkeeping.* Prior to an initial export, reexport, or transfer (in-country) to a validated end-user under a VEU Authorization, exporters, reexporters, and transferors must obtain certifications from the validated end-user regarding end-use and compliance with VEU requirements. Such certifications must include the contents set forth in supplement no. 8 to this part. Certifications and all records relating to VEU must be retained by exporters, reexporters, or transferors in accordance with the recordkeeping requirements set forth in part 762 of the EAR.

(f) *Reporting and review requirements*—(1) *Reports*—(i) *Reexport Information Required for VEU authorization.* Reexporters or transferors who make use of a VEU Authorization are required to submit annual reports to BIS. For VEU authorization, reexporters and transferors must include, for each validated end user to whom the exporter, reexporter, or transferor exported, reexported, or transferred (in-country) eligible items:

(A) The name and address of each validated end-user to whom eligible items were exported, reexported or transferred (in-country);

(B) The eligible destination to which the items were exported or reexported;

(C) The quantity of such items;

(D) The value of such items; and

(E) The ECCN(s) of such items.

(ii) [Reserved]

(iii) *Deadlines.* For reexporters or transferors making use of VEU Authorization, reports are due by February 15 of each year, and must cover the period from January 1 through December 31 of the prior year.

(iv) *Addresses.* Reports must be sent to: Office of Exporter Services, Bureau of Industry and Security, U.S. Department of Commerce, 14th Street and Constitution Avenue NW, Room 2099B, Washington, DC 20230. Mark the package ''General Authorization Validated End-User Report.''

(2) *Reviews.* Records related to activities covered by VEU Authorizations that are maintained by exporters, reexporters, transferors, and VEU authorizations will be reviewed on a periodic basis. Upon request by BIS,

exporters, reexporters, transferors, and validated end-users must allow review of records, including on-site reviews covering the information set forth in paragraphs (e) and (f)(1) of this section.

(g) *Notification requirement.* Exporters, reexporters, and transferors shipping under VEU Authorization are required to provide the VEUs to which they are shipping notice of the shipment. Such notification must be conveyed to the VEU in writing and must include a list of the VEU-authorized contents of the shipment and a list of the ECCNs under which the VEU-authorized items in the shipment are classified, as well as a statement that the items are being, will be, or were shipped pursuant to relevant VEU Authorization. Notification of the export, reexport, or transfer (in-country) to the VEU must be made within a timeframe agreed to in writing by the VEU and the person exporting, reexporting or transferring (in-country). The VEU and the person exporting, reexporting, or transferring (in-country) must agree to the notification timeframe prior to the initial shipment under the VEU Authorizations. Depending on the agreement between the VEU and the person exporting, reexporting, or transferring (in-country), a notification may be for individual shipments or for multiple shipments. Exporters, reexporters, transferors, and VEUs are required to maintain the notifications they send or receive in accordance with their recordkeeping requirements.

(h) *Termination of Conditions on a VEU Authorization.* VEUs that are subject to item-specific conditions and have received items subject to such conditions under General VEU Authorization are no longer bound by the conditions associated with the items if the items no longer require a license for export, reexport, or transfer (in-country) to or within the PRC or India, as applicable, or become eligible for shipment under a license exception to the destination. Items that become eligible for a license exception are subject to the terms and conditions of the applicable license exception and the restrictions in § 740.2 of the EAR. Items that become eligible for export, reexport, or transfer (in-country) without a license and that remain subject to the EAR may only be exported, reexported, transferred (in-country), or disposed of in accordance with the requirements of the EAR. Termination of VEU conditions does not relieve a validated end-user of its responsibility for violations that occurred prior to the availability of a license exception or prior to the removal of license requirements.

(i) *Records.* Records of items that were shipped under VEU Authorization prior to the removal of a license requirement or the availability of a license exception remain subject to the review requirements of paragraph (f)(2) of this section on and after the date that the license requirement was removed or the license exception became applicable.

Supplement No. 2 to Part 748 [Amended]

■ 20. Amend supplement no. 2 to part 748 by removing paragraphs (c)(3) and (c)(4).

■ 21. Amend supplement no. 8 to part 748 by:

■ a. Revising the heading of paragraph A; and

■ b. Removing and reserving paragraph B.

The revised heading reads as follows:

Supplement No. 8 to Part 748—Information Required in Requests for VEU Authorization

* * * * *

A. Required Information for Validated End-User Authorization Requests

* * * * *

Supplement No. 10 to Part 748 [Removed]

■ 22. Remove supplement no. 10 to part 748.

PART 762—RECORDKEEPING

■ 23. The authority citation for part 762 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.*

■ 24. Amend § 762.2 by:

■ a. Removing and reserving paragraph (58); and

■ b. Revising paragraph (b)(60).

The revisions to read as follows:

§ 762.2 Records to be retained.

* * * * *

(b) * * *

(58) [Reserved]

* * * * *

(60) § 744.24, Restrictions on exports, reexports, and transfers (in-country) of certain advanced computing items for use in data centers for end users and destinations of concern.

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PART 772—DEFINITIONS OF TERMS

■ 25. 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.*

■ 26. Amend § 772.1 by:

■ a. Adding the definition in alphabetical order for ''Aggregate TPP''; and

■ b. Removing the definition for ''Model Weights.''

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

* * * * *

Aggregate TPP. When referring to a group of integrated circuits (ICs) or commodities (*e.g.,* in a license application or other authorization), the ''aggregate TPP'' of the ICs or commodities is the sum of the total processing performance (TPP), as defined in the Technical Notes to ECCN 3A090, of all of the ICs or commodities specified in ECCNs 3A001.z; 3A090 (except for 3A090.c); 4A003.z; 4A004.z; 4A005.z; 4A090; 5A002.z; 5A004.z; 5A992.z in the group.

* * * * *

PART 774—THE COMMERCE CONTROL LIST

■ 27. 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. 783.2.

■ 28. Amend supplement no. 1 to part 774 by:

■ a. Revising ECCNs 3A001, 3A090, 3D001, 3E001, 4A003, 4A004, 4A005, 4A090, 4D001, 4D090, 4E001;

■ b. Removing ECCN 4E091; and

■ c. Revising ECCNs 5A002, 5A992, 5A004, 5D002, 5D992, 5E002, and 5E992.

The revisions to read as follows:

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

* * * * *

3A001 Electronic items as follows (see List of Items Controlled).

Reason for Control: NS, RS, MT, NP, AT

Control(s)	Country chart (see Supp. No. 1 to part 738)
NS applies to ''Monolithic Microwave Integrated Circuit'' (''MMIC'') amplifiers in 3A001.b.2 and discrete microwave transistors in 3A001.b.3, except those 3A001.b.2 and b.3 items being exported or reexported for use in civil telecommunications applications.	NS Column 1.
NS applies to entire entry	NS Column 2.
RS applies ''Monolithic Microwave Integrated Circuit'' (''MMIC'') amplifiers in 3A001.b.2 and discrete microwave transistors in 3A001.b.3, except those 3A001.b.2 and b.3 items being exported or reexported for use in civil telecommunications applications.	RS Column 1.
RS applies to 3A001.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to 3A001.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
MT applies to 3A001.a.1.a when usable in ''missiles''; and to 3A001.a.5.a when ''designed or modified'' for military use, hermetically sealed and rated for operation in the temperature range from below −54 °C to above +125 °C; and 3A001.z.2.	MT Column 1.
NP applies to pulse discharge capacitors in 3A001.e.2 and superconducting solenoidal electromagnets in 3A001.e.3 that meet or exceed the technical parameters in 3A201.a and 3A201.b, respectively; and 3A001.z.3.	NP Column 1.
AT applies to entire entry	AT Column 1.

Reporting Requirements: See § 743.1 of the EAR for reporting requirements for exports under 3A001.b.2 or b.3 under License Exceptions, and Validated End-User authorizations.

License Requirements: 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)

LVS: N/A for MT, NP; N/A for ''Monolithic Microwave Integrated Circuit'' (''MMIC'') amplifiers in 3A001.b.2, discrete microwave transistors in 3A001.b.3, except those that are being exported or reexported for use in civil telecommunications applications; N/A for and 3A001.z.

Yes for:

$1500: 3A001.c.

$3000: 3A001.b.1, b.2 (exported or reexported for use in civil telecommunications applications), b.3 (exported or reexported for use in civil telecommunications applications), b.9, .d, .e, .f, and .g.

$5000: 3A001.a (except a.1.a and a.5.a when controlled for MT), b.4 to b.7, and b.12.

GBS: Yes for 3A001.a.1.b, a.2 to a.14 (except .a.5.a when controlled for MT), b.2 (exported or reexported for use in civil telecommunications applications), b.8 (except for ''vacuum electronic devices'' exceeding 18 GHz), b.9., b.10, .g, .h, .i, and z.1.b (exported or reexported for use in civil telecommunications applications).

NAC/ACA: Yes, for 3A001.z.

ACM: Yes for 3A001.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 3A001.z.*

Special Conditions for STA

STA: License Exception STA may not be used to ship any item in 3A001.b.2 or b.3, except those that are being exported or reexported for use in civil telecommunications applications, or 3A001.z to any of the destinations listed 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) See Category XV of the USML for certain ''space-qualified'' electronics and Category XI of the USML for certain ASICs, 'transmit/receive modules,' 'transmit modules,' or 'MMICs' ''subject to the ITAR.'' (2) See also 3A090, 3A101, 3A201, 3A611, 3A901 for cryogenic CMOS integrated circuits and parametric signal amplifiers or quantum limited amplifiers not controlled by 3A001, 3A991, and 9A515.

Related Definitions: 'Microcircuit' means a device in which a number of passive or active elements are considered as indivisibly associated on or within a continuous structure to perform the function of a circuit. For the purposes of integrated circuits in 3A001.a.1, 5×10^3 Gy(Si) = 5×10^5 Rads (Si); 5×10^6 Gy (Si)/s = 5×10^8 Rads (Si)/s.

Items:

a. General purpose integrated circuits, as follows:

Note 1: *Integrated circuits include the following types:*

—''*Monolithic integrated circuits*'';

—''*Hybrid integrated circuits*'';

—''*Multichip integrated circuits*'';

—''*Film type integrated circuits*'', *including silicon-on-sapphire integrated circuits;*

—''*Optical integrated circuits*'';

—''*Three dimensional integrated circuits*'';

—''*Monolithic Microwave Integrated Circuits*'' (''*MMICs*'').

a.1. Integrated circuits designed or rated as radiation hardened to withstand any of the following:

a.1.a. A total dose of 5×10^3 Gy (Si), or higher;

a.1.b. A dose rate upset of 5×10^6 Gy (Si)/s, or higher; *or*

a.1.c. A fluence (integrated flux) of neutrons (1 MeV equivalent) of 5×10^{13} n/cm^2 or higher on silicon, or its equivalent for other materials;

Note: *3A001.a.1.c does not apply to Metal Insulator Semiconductors (MIS).*

a.2. ''Microprocessor microcircuits,'' ''microcomputer microcircuits,'' microcontroller microcircuits, storage integrated circuits manufactured from a compound semiconductor, analog-to-digital converters, integrated circuits that contain analog-to-digital converters and store or process the digitized data, digital-to-analog converters, electro-optical or ''optical integrated circuits'' designed for ''signal processing'', field programmable logic devices, custom integrated circuits for which either the function is unknown or the control status of the equipment in which the integrated circuit will be used in unknown, Fast Fourier Transform (FFT) processors, Static Random-Access Memories (SRAMs), or 'non-volatile memories,' having any of the following:

Technical Note: *For the purposes of 3A001.a.2, 'non-volatile memories' are memories with data retention over a period of time after a power shutdown.*

a.2.a. Rated for operation at an ambient temperature above 398 K (+125 °C);

a.2.b. Rated for operation at an ambient temperature below 218 K (−55 °C); *or*

a.2.c. Rated for operation over the entire ambient temperature range from 218 K (−55 °C) to 398 K (+125 °C);

N.B.: For cryogenic CMOS integrated circuits not specified by 3A001.a.2, see 3A901.a.

Note: *3A001.a.2 does not apply to integrated circuits designed for civil automobile or railway train applications.*

a.3. ''Microprocessor microcircuits'', ''microcomputer microcircuits'' and microcontroller microcircuits, manufactured from a compound semiconductor and operating at a clock frequency exceeding 40 MHz;

Note: *3A001.a.3 includes digital signal processors, digital array processors and digital coprocessors.*

a.4. [Reserved]

a.5. Analog-to-Digital Converter (ADC) and Digital-to-Analog Converter (DAC) integrated circuits, as follows:

a.5.a. ADCs having any of the following:

a.5.a.1. A resolution of 8 bit or more, but less than 10 bit, with a ''sample rate'' greater than 1.3 Giga Samples Per Second (GSPS);

a.5.a.2. A resolution of 10 bit or more, but less than 12 bit, with a ''sample rate'' greater than 600 Mega Samples Per Second (MSPS);

a.5.a.3. A resolution of 12 bit or more, but less than 14 bit, with a ''sample rate'' greater than 400 MSPS;

a.5.a.4. A resolution of 14 bit or more, but less than 16 bit, with a ''sample rate'' greater than 250 MSPS; *or*

a.5.a.5. A resolution of 16 bit or more with a ''sample rate'' greater than 65 MSPS;

N.B.: For integrated circuits that contain analog-to-digital converters and store or process the digitized data see 3A001.a.14.

Technical Notes: *For the purposes of 3A001.a.5.a:*

1. A resolution of n bit corresponds to a quantization of 2^n levels.

2. The resolution of the ADC is the number of bits of the digital output that represents the measured analog input. Effective Number of Bits (ENOB) is not used to determine the resolution of the ADC.

3. For ''multiple channel ADCs'', the ''sample rate'' is not aggregated and the ''sample rate'' is the maximum rate of any single channel.

4. For ''interleaved ADCs'' or for ''multiple channel ADCs'' that are specified to have an interleaved mode of operation, the ''sample rates'' are aggregated and the ''sample rate'' is the maximum combined total rate of all of the interleaved channels.

a.5.b. Digital-to-Analog Converters (DAC) having any of the following:

a.5.b.1. A resolution of 10-bit or more but less than 12-bit, with an 'adjusted update rate' of exceeding 3,500 MSPS; *or*

a.5.b.2. A resolution of 12-bit or more and having any of the following:

a.5.b.2.a. An 'adjusted update rate' exceeding 1,250 MSPS but not exceeding 3,500 MSPS, and having any of the following:

a.5.b.2.a.1. A settling time less than 9 ns to arrive at or within 0.024% of full scale from a full scale step; *or*

a.5.b.2.a.2. A 'Spurious Free Dynamic Range' (SFDR) greater than 68 dBc (carrier) when synthesizing a full scale analog signal of 100 MHz or the highest full scale analog signal frequency specified below 100 MHz; *or*

a.5.b.2.b. An 'adjusted update rate' exceeding 3,500 MSPS;

Technical Notes: *For the purposes of 3A001.a.5.b:*

1. 'Spurious Free Dynamic Range' (SFDR) is defined as the ratio of the RMS value of the carrier frequency (maximum signal component) at the input of the DAC to the RMS value of the next largest noise or harmonic distortion component at its output.

2. SFDR is determined directly from the specification table or from the characterization plots of SFDR versus frequency.

3. A signal is defined to be full scale when its amplitude is greater than −3 dBfs (full scale).

4. 'Adjusted update rate' for DACs is:

a. For conventional (non-interpolating) DACs, the 'adjusted update rate' is the rate at which the digital signal is converted to an analog signal and the output analog values are changed by the DAC. For DACs where the interpolation mode may be bypassed (interpolation factor of one), the DAC should be considered as a conventional (non-interpolating) DAC.

b. For interpolating DACs (oversampling DACs), the 'adjusted update rate' is defined as the DAC update rate divided by the smallest interpolating factor. For interpolating DACs, the 'adjusted update rate' may be referred to by different terms including:

- *input data rate*
- *input word rate*
- *input sample rate*
- *maximum total input bus rate*
- *maximum DAC clock rate for DAC clock input*

a.6. Electro-optical and ''optical integrated circuits'', designed for ''signal processing'' and having all of the following:

a.6.a. One or more than one internal ''laser'' diode;

a.6.b. One or more than one internal light detecting element; *and*

a.6.c. Optical waveguides;

a.7. 'Field programmable logic devices' having any of the following:

a.7.a. A maximum number of single-ended digital input/outputs of greater than 700; *or*

a.7.b. An 'aggregate one-way peak serial transceiver data rate' of 500 Gb/s or greater;

Note: *3A001.a.7 includes:*

—Complex Programmable Logic Devices (CPLDs);

—Field Programmable Gate Arrays (FPGAs);

—Field Programmable Logic Arrays (FPLAs);

—Field Programmable Interconnects (FPICs).

N.B.: For integrated circuits having field programmable logic devices that are combined with an analog-to-digital converter, see 3A001.a.14.

Technical Notes: *For the purposes of 3A001.a.7:*

1. Maximum number of digital input/outputs in 3A001.a.7.a is also referred to as maximum user input/outputs or maximum available input/outputs, whether the integrated circuit is packaged or bare die.

2. 'Aggregate one-way peak serial transceiver data rate' is the product of the peak serial one-way transceiver data rate times the number of transceivers on the FPGA.

a.8. [Reserved]

a.9. [Reserved]

a.10. Custom integrated circuits for which the function is unknown, or the control status of the equipment in which the integrated circuits will be used is unknown to the manufacturer, having any of the following:

a.10.a. More than 1,500 terminals;

a.10.b. A typical ''basic gate propagation delay time'' of less than 0.02 ns; *or*

a.10.c. An operating frequency exceeding 3 GHz;

a.11. Digital integrated circuits, other than those described in 3A001.a.3 to 3A001.a.10 and 3A001.a.12, based upon any compound semiconductor and having any of the following:

a.11.a. An equivalent gate count of more than 3,000 (2 input gates); *or*

a.11.b. A toggle frequency exceeding 1.2 GHz;

a.12. Fast Fourier Transform (FFT) processors having a rated execution time for an N-point complex FFT of less than ($N \log_2 N$)/20,480 ms, where N is the number of points;

Technical Note: *For the purposes of 3A001.a.12, when N is equal to 1,024 points, the formula in 3A001.a.12 gives an execution time of 500* μ*s.*

a.13. Direct Digital Synthesizer (DDS) integrated circuits having any of the following:

a.13.a. A Digital-to-Analog Converter (DAC) clock frequency of 3.5 GHz or more and a DAC resolution of 10 bit or more, but less than 12 bit; *or*

a.13.b. A DAC clock frequency of 1.25 GHz or more and a DAC resolution of 12 bit or more;

Technical Note:

For the purposes of 3A001.a.13, the DAC clock frequency may be specified as the master clock frequency or the input clock frequency.

a.14. Integrated circuits that perform or are programmable to perform all of the following:

a.14.a. Analog-to-digital conversions meeting any of the following:

a.14.a.1. A resolution of 8 bit or more, but less than 10 bit, with a ''sample rate'' greater than 1.3 Giga Samples Per Second (GSPS);

a.14.a.2. A resolution of 10 bit or more, but less than 12 bit, with a ''sample rate'' greater than 1.0 GSPS;

a.14.a.3. A resolution of 12 bit or more, but less than 14 bit, with a ''sample rate'' greater than 1.0 GSPS;

a.14.a.4. A resolution of 14 bit or more, but less than 16 bit, with a ''sample rate'' greater than 400 Mega Samples Per Second (MSPS); *or*

a.14.a.5. A resolution of 16 bit or more with a ''sample rate'' greater than 180 MSPS; *and*

a.14.b. Any of the following:

a.14.b.1. Storage of digitized data; *or*

a.14.b.2. Processing of digitized data;

N.B.: 1: For analog-to-digital converter integrated circuits see 3A001.a.5.a.

N.B.: 2: For field programmable logic devices see 3A001.a.7.

Technical Notes: *For the purposes of 3A001.a.14:*

1. A resolution of n bit corresponds to a quantization of 2^n levels.

2. The resolution of the ADC is the number of bits of the digital output of the ADC that represents the measured analog input. Effective Number of Bits (ENOB) is not used to determine the resolution of the ADC.

3. For integrated circuits with non-interleaving ''multiple channel ADCs'', the ''sample rate'' is not aggregated and the ''sample rate'' is the maximum rate of any single channel.

4. For integrated circuits with ''interleaved ADCs'' or with ''multiple channel ADCs'' that are specified to have an interleaved mode of operation, the ''sample rates'' are aggregated and the ''sample rate'' is the maximum combined total rate of all of the interleaved channels.

b. Microwave or millimeter wave items, as follows:

Technical Note: *For the purposes of 3A001.b, the parameter peak saturated power output may also be referred to on product data sheets as output power, saturated power output, maximum power output, peak power output, or peak envelope power output.*

N.B.: For parametric signal amplifiers or Quantum-limited amplifiers (QLAs) not specified by 3A001.b, see ECCN 3A901.b.

b.1. ''Vacuum electronic devices'' and cathodes, as follows:

Note 1: *3A001.b.1 does not control ''vacuum electronic devices'' designed or rated for operation in any frequency band and having all of the following:*

a. Does not exceed 31.8 GHz; and

b. Is ''allocated by the ITU'' for radio-communications services, but not for radio-determination.

Note 2: *3A001.b.1 does not control non-''space-qualified'' ''vacuum electronic devices'' having all the following:*

a. An average output power equal to or less than 50 W; and

b. Designed or rated for operation in any frequency band and having all of the following:

1. Exceeds 31.8 GHz but does not exceed 43.5 GHz; and

2. Is ''allocated by the ITU'' for radio-communications services, but not for radio-determination.

b.1.a. Traveling-wave ''vacuum electronic devices,'' pulsed or continuous wave, as follows:

b.1.a.1. Devices operating at frequencies exceeding 31.8 GHz;

b.1.a.2. Devices having a cathode heater with a turn on time to rated RF power of less than 3 seconds;

b.1.a.3. Coupled cavity devices, or derivatives thereof, with a ''fractional bandwidth'' of more than 7% or a peak power exceeding 2.5 kW;

b.1.a.4. Devices based on helix, folded waveguide, or serpentine waveguide circuits, or derivatives thereof, having any of the following:

b.1.a.4.a. An ''instantaneous bandwidth'' of more than one octave, and average power (expressed in kW) times frequency (expressed in GHz) of more than 0.5;

b.1.a.4.b. An ''instantaneous bandwidth'' of one octave or less, and average power (expressed in kW) times frequency (expressed in GHz) of more than 1;

b.1.a.4.c. Being ''space-qualified''; *or*

b.1.a.4.d. Having a gridded electron gun;

b.1.a.5. Devices with a ''fractional bandwidth'' greater than or equal to 10%, with any of the following:

b.1.a.5.a. An annular electron beam;

b.1.a.5.b. A non-axisymmetric electron beam; *or*

b.1.a.5.c. Multiple electron beams;

b.1.b. Crossed-field amplifier ''vacuum electronic devices'' with a gain of more than 17 dB;

b.1.c. Thermionic cathodes, designed for ''vacuum electronic devices,'' producing an emission current density at rated operating conditions exceeding 5 A/cm^2 or a pulsed (non-continuous) current density at rated operating conditions exceeding 10 A/cm^2;

b.1.d. ''Vacuum electronic devices'' with the capability to operate in a 'dual mode.'

Technical Note: *For the purposes of 3A001.b.1.d, 'dual mode' means the ''vacuum electronic device'' beam current can be intentionally changed between continuous-wave and pulsed mode operation by use of a grid and produces a peak pulse output power greater than the continuous-wave output power.*

b.2. ''Monolithic Microwave Integrated Circuit'' (''MMIC'') amplifiers that any of the following:

N.B.: For ''MMIC'' amplifiers that have an integrated phase shifter see 3A001.b.12.

b.2.a. Rated for operation at frequencies exceeding 2.7 GHz up to and including 6.8 GHz with a ''fractional bandwidth'' greater than 15%, and having any of the following:

b.2.a.1. A peak saturated power output greater than 75 W (48.75 dBm) at any frequency exceeding 2.7 GHz up to and including 2.9 GHz;

b.2.a.2. A peak saturated power output greater than 55 W (47.4 dBm) at any frequency exceeding 2.9 GHz up to and including 3.2 GHz;

b.2.a.3. A peak saturated power output greater than 40 W (46 dBm) at any frequency exceeding 3.2 GHz up to and including 3.7 GHz; *or*

b.2.a.4. A peak saturated power output greater than 20 W (43 dBm) at any frequency exceeding 3.7 GHz up to and including 6.8 GHz;

b.2.b. Rated for operation at frequencies exceeding 6.8 GHz up to and including 16 GHz with a ''fractional bandwidth'' greater than 10%, and having any of the following:

b.2.b.1. A peak saturated power output greater than 10 W (40 dBm) at any frequency exceeding 6.8 GHz up to and including 8.5 GHz; *or*

b.2.b.2. A peak saturated power output greater than 5 W (37 dBm) at any frequency exceeding 8.5 GHz up to and including 16 GHz;

b.2.c. Rated for operation with a peak saturated power output greater than 3 W (34.77 dBm) at any frequency exceeding 16 GHz up to and including 31.8 GHz, and with a ''fractional bandwidth'' of greater than 10%;

b.2.d. Rated for operation with a peak saturated power output greater than 0.1 nW (−70 dBm) at any frequency exceeding 31.8 GHz up to and including 37 GHz;

b.2.e. Rated for operation with a peak saturated power output greater than 1 W (30 dBm) at any frequency exceeding 37 GHz up to and including 43.5 GHz, and with a ''fractional bandwidth'' of greater than 10%;

b.2.f. Rated for operation with a peak saturated power output greater than 31.62 mW (15 dBm) at any frequency exceeding 43.5 GHz up to and including 75 GHz, and with a ''fractional bandwidth'' of greater than 10%;

b.2.g. Rated for operation with a peak saturated power output greater than 10 mW (10 dBm) at any frequency exceeding 75 GHz up to and including 90 GHz, and with a ''fractional bandwidth'' of greater than 5%; *or*

b.2.h. Rated for operation with a peak saturated power output greater than 0.1 nW (−70 dBm) at any frequency exceeding 90 GHz;

Note 1: *[Reserved]*

Note 2: *The control status of the ''MMIC'' whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by 3A001.b.2.a through 3A001.b.2.h, is determined by the lowest peak saturated power output control threshold.*

Note 3: *Notes 1 and 2 following the Category 3 heading for product group A. Systems, Equipment, and Components mean that 3A001.b.2 does not control ''MMICs'' if they are ''specially designed'' for other applications, e.g., telecommunications, radar, automobiles.*

b.3. Discrete microwave transistors that are any of the following:

b.3.a. Rated for operation at frequencies exceeding 2.7 GHz up to and including 6.8 GHz and having any of the following:

b.3.a.1. A peak saturated power output greater than 400 W (56 dBm) at any frequency exceeding 2.7 GHz up to and including 2.9 GHz;

b.3.a.2. A peak saturated power output greater than 205 W (53.12 dBm) at any frequency exceeding 2.9 GHz up to and including 3.2 GHz;

b.3.a.3. A peak saturated power output greater than 115 W (50.61 dBm) at any frequency exceeding 3.2 GHz up to and including 3.7 GHz; *or*

b.3.a.4. A peak saturated power output greater than 60 W (47.78 dBm) at any frequency exceeding 3.7 GHz up to and including 6.8 GHz;

b.3.b. Rated for operation at frequencies exceeding 6.8 GHz up to and including 31.8 GHz and having any of the following:

b.3.b.1. A peak saturated power output greater than 50 W (47 dBm) at any frequency exceeding 6.8 GHz up to and including 8.5 GHz;

b.3.b.2. A peak saturated power output greater than 15 W (41.76 dBm) at any frequency exceeding 8.5 GHz up to and including 12 GHz;

b.3.b.3. A peak saturated power output greater than 40 W (46 dBm) at any frequency exceeding 12 GHz up to and including 16 GHz; *or*

b.3.b.4. A peak saturated power output greater than 7 W (38.45 dBm) at any frequency exceeding 16 GHz up to and including 31.8 GHz;

b.3.c. Rated for operation with a peak saturated power output greater than 0.5 W (27 dBm) at any frequency exceeding 31.8 GHz up to and including 37 GHz;

b.3.d. Rated for operation with a peak saturated power output greater than 1 W (30 dBm) at any frequency exceeding 37 GHz up to and including 43.5 GHz;

b.3.e. Rated for operation with a peak saturated power output greater than 0.1 nW (−70 dBm) at any frequency exceeding 43.5 GHz; *or*

b.3.f. Other than those specified by 3A001.b.3.a to 3A001.b.3.e and rated for operation with a peak saturated power output greater than 5 W (37.0 dBm) at all frequencies exceeding 8.5 GHz up to and including 31.8 GHz;

Note 1: *The control status of a transistor in 3A001.b.3.a through 3A001.b.3.e, whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by 3A001.b.3.a through 3A001.b.3.e, is determined by the lowest peak saturated power output control threshold.*

Note 2: *3A001.b.3 includes bare dice, dice mounted on carriers, or dice mounted in packages. Some discrete transistors may also be referred to as power amplifiers, but the status of these discrete transistors is determined by 3A001.b.3.*

b.4. Microwave solid state amplifiers and microwave assemblies/modules containing microwave solid state amplifiers, that are any of the following:

b.4.a. Rated for operation at frequencies exceeding 2.7 GHz up to and including 6.8 GHz with a ''fractional bandwidth'' greater than 15%, and having any of the following:

b.4.a.1. A peak saturated power output greater than 500 W (57 dBm) at any frequency exceeding 2.7 GHz up to and including 2.9 GHz;

b.4.a.2. A peak saturated power output greater than 270 W (54.3 dBm) at any frequency exceeding 2.9 GHz up to and including 3.2 GHz;

b.4.a.3. A peak saturated power output greater than 200 W (53 dBm) at any frequency exceeding 3.2 GHz up to and including 3.7 GHz; *or*

b.4.a.4. A peak saturated power output greater than 90 W (49.54 dBm) at any frequency exceeding 3.7 GHz up to and including 6.8 GHz;

b.4.b. Rated for operation at frequencies exceeding 6.8 GHz up to and including 31.8 GHz with a ''fractional bandwidth'' greater than 10%, and having any of the following:

b.4.b.1. A peak saturated power output greater than 70 W (48.45 dBm) at any frequency exceeding 6.8 GHz up to and including 8.5 GHz;

b.4.b.2. A peak saturated power output greater than 50 W (47 dBm) at any frequency exceeding 8.5 GHz up to and including 12 GHz;

b.4.b.3. A peak saturated power output greater than 30 W (44.77 dBm) at any frequency exceeding 12 GHz up to and including 16 GHz; *or*

b.4.b.4. A peak saturated power output greater than 20 W (43 dBm) at any frequency exceeding 16 GHz up to and including 31.8 GHz;

b.4.c. Rated for operation with a peak saturated power output greater than 0.5 W (27 dBm) at any frequency exceeding 31.8 GHz up to and including 37 GHz;

b.4.d. Rated for operation with a peak saturated power output greater than 2 W (33 dBm) at any frequency exceeding 37 GHz up to and including 43.5 GHz, and with a ''fractional bandwidth'' of greater than 10%;

b.4.e. Rated for operation at frequencies exceeding 43.5 GHz and having any of the following:

b.4.e.1. A peak saturated power output greater than 0.2 W (23 dBm) at any frequency exceeding 43.5 GHz up to and including 75 GHz, and with a ''fractional bandwidth'' of greater than 10%;

b.4.e.2. A peak saturated power output greater than 20 mW (13 dBm) at any frequency exceeding 75 GHz up to and including 90 GHz, and with a ''fractional bandwidth'' of greater than 5%; *or*

b.4.e.3. A peak saturated power output greater than 0.1 nW (−70 dBm) at any frequency exceeding 90 GHz; *or*

b.4.f. [Reserved]

N.B.:

1. For ''MMIC'' amplifiers see 3A001.b.2.

2. For 'transmit/receive modules' and 'transmit modules' see 3A001.b.12.

3. For converters and harmonic mixers, designed to extend the operating or frequency range of signal analyzers, signal generators, network analyzers or microwave test receivers, see 3A001.b.7.

Note 1: *[Reserved]*

Note 2: *The control status of an item whose rated operating frequency includes frequencies listed in more than one frequency range, as defined by 3A001.b.4.a through 3A001.b.4.e, is determined by the lowest peak saturated power output control threshold.*

b.5. Electronically or magnetically tunable band-pass or band-stop filters, having more than 5 tunable resonators capable of tuning across a 1.5:1 frequency band (f_{max}/f_{min}) in less than 10 ms and having any of the following:

b.5.a. A band-pass bandwidth of more than 0.5% of center frequency; *or*

b.5.b. A band-stop bandwidth of less than 0.5% of center frequency;

b.6. [Reserved]

b.7. Converters and harmonic mixers, that are any of the following:

b.7.a. Designed to extend the frequency range of ''signal analyzers'' beyond 90 GHz;

b.7.b. Designed to extend the operating range of signal generators as follows:

b.7.b.1. Beyond 90 GHz;

b.7.b.2. To an output power greater than 100 mW (20 dBm) anywhere within the frequency range exceeding 43.5 GHz but not exceeding 90 GHz;

b.7.c. Designed to extend the operating range of network analyzers as follows:

b.7.c.1. Beyond 110 GHz;

b.7.c.2. To an output power greater than 31.62 mW (15 dBm) anywhere within the frequency range exceeding 43.5 GHz but not exceeding 90 GHz;

b.7.c.3. To an output power greater than 1 mW (0 dBm) anywhere within the frequency range exceeding 90 GHz but not exceeding 110 GHz; *or*

b.7.d. Designed to extend the frequency range of microwave test receivers beyond 110 GHz;

b.8. Microwave power amplifiers containing ''vacuum electronic devices'' controlled by 3A001.b.1 and having all of the following:

b.8.a. Operating frequencies above 3 GHz;

b.8.b. An average output power to mass ratio exceeding 80 W/kg; *and*

b.8.c. A volume of less than 400 cm^3;

Note: *3A001.b.8 does not control equipment designed or rated for operation in any frequency band which is ''allocated by the ITU'' for radio-communications services, but not for radio-determination.*

b.9. Microwave Power Modules (MPM) consisting of, at least, a traveling-wave ''vacuum electronic device,'' a ''Monolithic Microwave Integrated Circuit'' (''MMIC'') and an integrated electronic power conditioner and having all of the following:

b.9.a. A 'turn-on time' from off to fully operational in less than 10 seconds;

b.9.b. A volume less than the maximum rated power in Watts multiplied by 10 cm^3/W; *and*

b.9.c. An ''instantaneous bandwidth'' greater than 1 octave ($f_{max} > 2f_{min}$) and having any of the following:

b.9.c.1. For frequencies equal to or less than 18 GHz, an RF output power greater than 100 W; *or*

b.9.c.2. A frequency greater than 18 GHz;

Technical Notes: *For the purposes of 3A001.b.9:*

1. To calculate the volume in 3A001.b.9.b, the following example is provided: for a maximum rated power of 20 W, the volume would be: 20 W × 10 cm^3/W = 200 cm^3.

2. The 'turn-on time' in 3A001.b.9.a refers to the time from fully-off to fully operational, i.e., it includes the warm-up time of the MPM.

b.10. Oscillators or oscillator assemblies, specified to operate with a single sideband (SSB) phase noise, in dBc/Hz, less (better) than $-(126 + 20\log_{10}F - 20\log_{10}f)$ anywhere within the range of 10 Hz ≤ F ≤ 10 kHz;

Technical Note: *For the purposes of 3A001.b.10, F is the offset from the operating frequency in Hz and f is the operating frequency in MHz.*

b.11. 'Frequency synthesizer' ''electronic assemblies'' having a ''frequency switching time'' as specified by any of the following:

b.11.a. Less than 143 ps;

b.11.b. Less than 100 µs for any frequency change exceeding 2.2 GHz within the synthesized frequency range exceeding 4.8 GHz but not exceeding 31.8 GHz;

b.11.c. [Reserved]

b.11.d. Less than 500 µs for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 31.8 GHz but not exceeding 37 GHz;

b.11.e. Less than 100 µs for any frequency change exceeding 2.2 GHz within the synthesized frequency range exceeding 37 GHz but not exceeding 75 GHz;

b.11.f. Less than 100 µs for any frequency change exceeding 5.0 GHz within the synthesized frequency range exceeding 75 GHz but not exceeding 90 GHz; *or*

b.11.g. Less than 1 ms within the synthesized frequency range exceeding 90 GHz;

Technical Note: *For the purposes of 3A001.b.11, a 'frequency synthesizer' is any kind of frequency source, regardless of the actual technique used, providing a*

multiplicity of simultaneous or alternative output frequencies, from one or more outputs, controlled by, derived from or disciplined by a lesser number of standard (or master) frequencies.

N.B.: For general purpose ''signal analyzers'', signal generators, network analyzers and microwave test receivers, see 3A002.c, 3A002.d, 3A002.e and 3A002.f, respectively.

b.12. 'Transmit/receive module,' 'transmit/receive MMIC,' 'transmit modules,' and 'transmit MMICs,' rated for operation at frequencies above 2.7 GHz and having all of the following:

b.12.a. A peak saturated power output (in watts), P_{sat}, greater than 505.62 divided by the maximum operating frequency (in GHz) squared [P_{sat}>505.62 W*GHz^2/f_{GHz}^2] for any channel;

b.12.b. A ''fractional bandwidth'' of 5% or greater for any channel;

b.12.c. Any planar side with length d (in cm) equal to or less than 15 divided by the lowest operating frequency in GHz [d ≤ 15cm*GHz*N/f_{GHz}] where N is the number of transmit or transmit/receive channels; *and*

b.12.d. An electronically variable phase shifter per channel;

Technical Notes: *For the purposes of 3A001.b.12:*

1. A 'transmit/receive module' is a multifunction ''electronic assembly'' that provides bi-directional amplitude and phase control for transmission and reception of signals.

2. A 'transmit module' is an ''electronic assembly'' that provides amplitude and phase control for transmission of signals.

3. A 'transmit/receive MMIC' is a multifunction ''MMIC'' that provides bi-directional amplitude and phase control for transmission and reception of signals.

4. A 'transmit MMIC' is a ''MMIC'' that provides amplitude and phase control for transmission of signals.

*5. 2.7 GHz should be used as the lowest operating frequency (f_{GHz}) in the formula in 3A001.b.12.c for transmit/receive or transmit modules that have a rated operation range extending downward to 2.7 GHz and below [d≤15cm*GHz*N/2.7 GHz].*

6. 3A001.b.12 applies to 'transmit/receive modules' or 'transmit modules' with or without a heat sink. The value of d in 3A001.b.12.c does not include any portion of the 'transmit/receive module' or 'transmit module' that functions as a heat sink.

7. 'Transmit/receive modules' or 'transmit modules,' 'transmit/receive MMICs' or 'transmit MMICs' may or may not have N integrated radiating antenna elements where N is the number of transmit or transmit/receive channels.

c. Acoustic wave devices as follows and ''specially designed'' ''components'' therefor:

c.1. Surface acoustic wave and surface skimming (shallow bulk) acoustic wave devices, having any of the following:

c.1.a. A carrier frequency exceeding 6 GHz;

c.1.b. A carrier frequency exceeding 1 GHz, but not exceeding 6 GHz and having any of the following:

c.1.b.1. A 'frequency side-lobe rejection' exceeding 65 dB;

c.1.b.2. A product of the maximum delay time and the bandwidth (time in μs and bandwidth in MHz) of more than 100;

c.1.b.3. A bandwidth greater than 250 MHz; *or*

c.1.b.4. A dispersive delay of more than 10 μs; *or*

c.1.c. A carrier frequency of 1 GHz or less and having any of the following:

c.1.c.1. A product of the maximum delay time and the bandwidth (time in μs and bandwidth in MHz) of more than 100;

c.1.c.2. A dispersive delay of more than 10 μs; *or*

c.1.c.3. A 'frequency side-lobe rejection' exceeding 65 dB and a bandwidth greater than 100 MHz;

Technical Note: *For the purposes of 3A001.c.1, 'frequency side-lobe rejection' is the maximum rejection value specified in data sheet.*

c.2. Bulk (volume) acoustic wave devices that permit the direct processing of signals at frequencies exceeding 6 GHz;

c.3. Acoustic-optic ''signal processing'' devices employing interaction between acoustic waves (bulk wave or surface wave) and light waves that permit the direct processing of signals or images, including spectral analysis, correlation or convolution;

Note: *3A001.c does not control acoustic wave devices that are limited to a single band pass, low pass, high pass or notch filtering, or resonating function.*

d. Electronic devices and circuits containing ''components,'' manufactured from ''superconductive'' materials, ''specially designed'' for operation at temperatures below the ''critical temperature'' of at least one of the ''superconductive'' constituents and having any of the following:

d.1. Current switching for digital circuits using ''superconductive'' gates with a product of delay time per gate (in seconds) and power dissipation per gate (in watts) of less than 10^{-14} J; *or*

d.2. Frequency selection at all frequencies using resonant circuits with Q-values exceeding 10,000;

e. High energy devices as follows:

e.1. 'Cells' as follows:

e.1.a 'Primary cells' having any of the following at 20 °C:

e.1.a.1. 'Energy density' exceeding 550 Wh/kg and a 'continuous power density' exceeding 50 W/kg; *or*

e.1.a.2. 'Energy density' exceeding 50 Wh/kg and a 'continuous power density' exceeding 350 W/kg;

e.1.b. 'Secondary cells' having an 'energy density' exceeding 350 Wh/kg at 20 °C;

Technical Notes:

1. For the purposes of 3A001.e.1, 'energy density' (Wh/kg) is calculated from the nominal voltage multiplied by the nominal capacity in ampere-hours (Ah) divided by the mass in kilograms. If the nominal capacity is not stated, energy density is calculated from the nominal voltage squared then multiplied by the discharge duration in hours divided by the discharge load in Ohms and the mass in kilograms.

2. For the purposes of 3A001.e.1, a 'cell' is defined as an electrochemical device, which has positive and negative electrodes, an electrolyte, and is a source of electrical energy. It is the basic building block of a battery.

3. For the purposes of 3A001.e.1.a, a 'primary cell' is a 'cell' that is not designed to be charged by any other source.

4. For the purposes of 3A001.e.1.b, a 'secondary cell' is a 'cell' that is designed to be charged by an external electrical source.

5. For the purposes of 3A001.e.1.a, 'continuous power density' (W/kg) is calculated from the nominal voltage multiplied by the specified maximum continuous discharge current in ampere (A) divided by the mass in kilograms. 'Continuous power density' is also referred to as specific power.

Note: *3A001.e does not control batteries, including single-cell batteries.*

e.2. High energy storage capacitors as follows:

e.2.a. Capacitors with a repetition rate of less than 10 Hz (single shot capacitors) and having all of the following:

e.2.a.1. A voltage rating equal to or more than 5 kV;

e.2.a.2. An energy density equal to or more than 250 J/kg; *and*

e.2.a.3. A total energy equal to or more than 25 kJ;

e.2.b. Capacitors with a repetition rate of 10 Hz or more (repetition rated capacitors) and having all of the following:

e.2.b.1. A voltage rating equal to or more than 5 kV;

e.2.b.2. An energy density equal to or more than 50 J/kg;

e.2.b.3. A total energy equal to or more than 100 J; *and*

e.2.b.4. A charge/discharge cycle life equal to or more than 10,000;

e.3. ''Superconductive'' electromagnets and solenoids, ''specially designed'' to be fully charged or discharged in less than one second and having all of the following:

Note: *3A001.e.3 does not control ''superconductive'' electromagnets or solenoids ''specially designed'' for Magnetic Resonance Imaging (MRI) medical equipment.*

e.3.a. Energy delivered during the discharge exceeding 10 kJ in the first second;

e.3.b. Inner diameter of the current carrying windings of more than 250 mm; *and*

e.3.c. Rated for a magnetic induction of more than 8 T or ''overall current density'' in the winding of more than 300 A/mm^2;

e.4. Solar cells, cell-interconnect-coverglass (CIC) assemblies, solar panels, and solar arrays, which are ''space-qualified,'' having a minimum average efficiency exceeding 20% at an operating temperature of 301 K (28 °C) under simulated 'AM0' illumination with an irradiance of 1,367 Watts per square meter (W/m^2);

Technical Note: *For the purposes of 3A001.e.4, 'AM0', or 'Air Mass Zero', refers to the spectral irradiance of sun light in the earth's outer atmosphere when the distance between the earth and sun is one astronomical unit (AU).*

f. Rotary input type absolute position encoders having an ''accuracy'' equal to or less (better) than 1.0 second of arc and ''specially designed'' encoder rings, discs or scales therefor;

g. Solid-state pulsed power switching thyristor devices and 'thyristor modules',

using either electrically, optically, or electron radiation controlled switch methods and having any of the following:

g.1. A maximum turn-on current rate of rise (di/dt) greater than 30,000 A/µs and off-state voltage greater than 1,100 V; *or*

g.2. A maximum turn-on current rate of rise (di/dt) greater than 2,000 A/µs and having all of the following:

g.2.a. An off-state peak voltage equal to or greater than 3,000 V; *and*

g.2.b. A peak (surge) current equal to or greater than 3,000 A;

Note 1: *3A001.g. includes:*

—Silicon Controlled Rectifiers (SCRs)
—Electrical Triggering Thyristors (ETTs)
—Light Triggering Thyristors (LTTs)
—Integrated Gate Commutated Thyristors (IGCTs)
—Gate Turn-off Thyristors (GTOs)
—MOS Controlled Thyristors (MCTs)
—Solidtrons

Note 2: *3A001.g does not control thyristor devices and 'thyristor modules' incorporated into equipment designed for civil railway or ''civil aircraft'' applications.*

Technical Note: *For the purposes of 3A001.g, a 'thyristor module' contains one or more thyristor devices.*

h. Solid-state power semiconductor switches, diodes, or 'modules', having all of the following:

h.1. Rated for a maximum operating junction temperature greater than 488 K (215 °C);

h.2. Repetitive peak off-state voltage (blocking voltage) exceeding 300 V; *and*

h.3. Continuous current greater than 1 A.

Technical Note: *For the purposes of 3A001.h, 'modules' contain one or more solid-state power semiconductor switches or diodes.*

Note 1: *Repetitive peak off-state voltage in 3A001.h includes drain to source voltage, collector to emitter voltage, repetitive peak reverse voltage and peak repetitive off-state blocking voltage.*

Note 2: *3A001.h includes:*

—Junction Field Effect Transistors (JFETs)
—Vertical Junction Field Effect Transistors (VJFETs)
—Metal Oxide Semiconductor Field Effect Transistors (MOSFETs)
—Double Diffused Metal Oxide Semiconductor Field Effect Transistor (DMOSFET)
—Insulated Gate Bipolar Transistor (IGBT)
—High Electron Mobility Transistors (HEMTs)
—Bipolar Junction Transistors (BJTs)
—Thyristors and Silicon Controlled Rectifiers (SCRs)
—Gate Turn-Off Thyristors (GTOs)
—Emitter Turn-Off Thyristors (ETOs)
—PiN Diodes
—Schottky Diodes

Note 3: *3A001.h does not apply to switches, diodes, or 'modules', incorporated into equipment designed for civil automobile, civil railway, or ''civil aircraft'' applications.*

i. Intensity, amplitude, or phase electro-optic modulators, designed for analog signals and having any of the following:

i.1. A maximum operating frequency of more than 10 GHz but less than 20 GHz, an optical insertion loss equal to or less than 3 dB and having any of the following:

i.1.a. A 'half-wave voltage' ('Vπ') less than 2.7 V when measured at a frequency of 1 GHz or below; *or*

i.1.b. A 'Vπ' of less than 4 V when measured at a frequency of more than 1 GHz; *or*

i.2. A maximum operating frequency equal to or greater than 20 GHz, an optical insertion loss equal to or less than 3 dB and having any of the following:

i.2.a. A 'Vπ' less than 3.3 V when measured at a frequency of 1 GHz or below; *or*

i.2.b. A 'Vπ' less than 5 V when measured at a frequency of more than 1 GHz.

Note: *3A001.i includes electro-optic modulators having optical input and output connectors (e.g., fiber-optic pigtails).*

Technical Note: *For the purposes of 3A001.i, a 'half-wave voltage' ('Vπ') is the applied voltage necessary to make a phase change of 180 degrees in the wavelength of light propagating through the optical modulator.*

j. through y. [Reserved]

z. Any commodity described in 3A001 that meets or exceeds the performance parameters in 3A090, as follows:

z.1.a ''Monolithic Microwave Integrated Circuit'' (''MMIC'') amplifiers described in 3A001.b.2 and discrete microwave transistors in 3A001.b.3 that also meet or exceed the performance parameters in ECCN 3A090.a, except those 3A001.b.2 and b.3 items being exported or reexported for use in civil telecommunications applications;

z.1.b ''Monolithic Microwave Integrated Circuit'' (''MMIC'') amplifiers described in 3A001.b.2 and discrete microwave transistors in 3A001.b.3 that also meet or exceed the performance parameters in ECCN 3A090.b, except those 3A001.b.2 and b.3 items being exported or reexported for use in civil telecommunications applications;

z.2.a Commodities that are described in 3A001.a.1.a when usable in ''missiles'' that also meet or exceed the performance parameters in ECCN 3A090.a; and to 3A001.a.5.a when ''designed or modified'' for military use, hermetically sealed and rated for operation in the temperature range from below −54 °C to above +125 °C and that also meet or exceed the performance parameters in ECCN 3A090.a;

z.2.b Commodities that are described in 3A001.a.1.a when usable in ''missiles'' that also meet or exceed the performance parameters in ECCN 3A090.b; and to 3A001.a.5.a when ''designed or modified'' for military use, hermetically sealed and rated for operation in the temperature range from below −54 °C to above +125 °C and that also meet or exceed the performance parameters in ECCN 3A090.b;

z.3.a. Pulse discharge capacitors described in 3A001.e.2 and superconducting solenoidal electromagnets in 3A001.e.3 that meet or exceed the technical parameters in 3A201.a and 3A201.b, respectively and that also meet or exceed the performance parameters in ECCN 3A090.a;

z.3.b Pulse discharge capacitors described in 3A001.e.2 and superconducting solenoidal electromagnets in 3A001.e.3 that meet or exceed the technical parameters in 3A201.a and 3A201.b, respectively and that also meet or exceed the performance parameters in ECCN 3A090.b;

z.4.a. All other commodities specified in this ECCN that meet or exceed the performance parameters of ECCN 3A090.a; or

z.4.b All other commodities specified in this ECCN that meet or exceed the performance parameters of ECCN 3A090.b.

* * * * *

3A090 Integrated circuits as follows (see List of Items Controlled).

License Requirements

Reason for Control: RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
RS applies to entire entry, except for 3A090.c	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to entire entry, except 3A090.c	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
RS applies to 3A090.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)(i)(B) 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: N/A

GBS: N/A

NAC/ACA: Yes, for 3A090.a, if the item is not designed or marketed for use in datacenters and has a 'total processing performance' of 4800 or more; yes, for 3A090.b, if the item is designed or marketed for use in datacenters. N/A for 3A090.c.

HBM: Yes, for 3A090.c. See § 740.25 of the EAR.

ACM: Yes

List of Items Controlled

Related Controls: (1) See ECCNs 3D001, 3E001, 5D002.z, and 5D992.z for associated technology and software controls. (2) See ECCNs 3A001.z, 5A002.z, 5A004.z, and 5A992.z.
Related Definitions: N/A
Items:

a. Integrated circuits having one or more digital processing units having either of the following:

a.1. A 'total processing performance' of 4800 or more; *or*

a.2. A 'total processing performance' of 1600 or more and a 'performance density' of 5.92 or more.

Note 1 to 3A090.a: *When a ''front-end fabricator'' or ''OSAT'' company is seeking to export, reexport, or transfer (in-country) an ''applicable advanced logic integrated circuit,'' there is a presumption that the item is 3A090.a and designed or marketed for datacenters. If the ''front-end fabricator'' or ''OSAT'' company cannot overcome this presumption, then it must comply with all license requirements applicable to items specified in 3A090.a. However, this presumption does not apply to any entity other than the ''front-end fabricator'' or ''OSAT'' company. A ''front-end fabricator'' or ''OSAT'' company can overcome this presumption in any of the following three ways outlined in paragraphs a. through c. of this Note 1.*

a. If the designer of the ''applicable advanced logic integrated circuit'' is an approved or authorized integrated circuit designer, then a datasheet or other attestation of the 'total processing performance' and the 'performance density' from the approved or authorized integrated circuit designer indicating that the IC is not specified in 3A090.a will overcome the presumption for the ''front-end fabricator'' or ''OSAT'' company that the IC is specified in ECCN 3A090.a.

(1) Approved integrated circuit designers are listed in supplement no. 6 to this part of the EAR;

(2) Prior to December 31, 2026, authorized integrated circuit designers include all integrated circuit designers:

(i) Headquartered in Taiwan or a destination specified in Country Group A:1 or A:5, that are neither located in nor have an ultimate parent headquartered in Macau or a destination specified in Country Group D:5 of supplement no. 1 to part 740 of the EAR; and

(ii) That have agreed to submit applicable information described in § 743.9(b) to the ''front-end fabricator,'' which the ''front-end fabricator'' must then report to BIS.

(3) After December 31, 2026, authorized integrated circuit designers include any integrated circuit designer that both meets the criteria specified in subparagraph (2) and has submitted an application to become an approved integrated circuit designer. However, any company deemed an authorized IC designer after December 31, 2026, will cease to be an authorized IC designer 180 days after the submission of its application to become an approved IC designer.

b. If the integrated circuit designer is neither located in nor has an ultimate parent headquartered in a destination specified in Country Groups D:1, D:4, or D:5 of supplement no. 1 to part 740 of the EAR or in paragraph (a)(6)(iii)(A)(1) of § 742.6, and if the integrated circuit die is packaged by the ''front-end fabricator'' at a location outside of Macau or a destination specified in Country Group D:5 in supplement no. 1 to part 740, then the attestation of the ''front-end fabricator'' that (a) the ''aggregated approximated transistor count'' of the final packaged IC is below 30 billion transistors, or (b) the final packaged IC does not contain high-bandwidth memory and that the ''aggregated approximated transistor count'' of the final packaged IC is below (i) 35 billion transistors for any exports, reexports, or transfers (in-country) completed in 2027; or (ii) 40 billion transistors for any exports, reexports, or transfers (in-country) completed in 2029 or thereafter, then this overcomes the presumption by the ''front-end fabricator'' or ''OSAT'' company that the IC is specified in ECCN 3A090.a.

c. If the integrated circuit designer is neither located in nor have an ultimate parent headquartered in a destination specified in Country Groups D;1, D:4, or D:5 of supplement no. 1 to part 740 of the EAR or in paragraph (a)(6)(iii)(A)(1) of § 742.6, and if the integrated circuit is packaged by an approved ''OSAT'' company listed in supplement no. 7 to part 740 of the EAR, then the attestation of the approved ''OSAT'' company that (a) the ''aggregated approximated transistor count'' of the final packaged IC is below 30 billion transistors, or (b) the final packaged IC does not contain high-bandwidth memory and that the ''aggregated approximated transistor count'' of the final packaged IC is below (i) 35 billion transistors for any exports, reexports, or transfers (in-country) completed in 2027; or (ii) 40 billion transistors for any exports, reexports, or transfers (in-country) completed in 2029 or thereafter, then this overcomes the presumption by the ''front-end fabricator'' or ''OSAT'' company that the IC is specified in ECCN 3A090.a.

d. It is not sufficient for the ''front-end fabricator'' or ''OSAT'' company to confirm the ECCN by relying on the attestation of the end user or other party to the transaction, except under one of the three ways enumerated in paragraphs a. through c. of this note. In the absence of an attestation of the 'total processing performance' and the 'performance density' by an approved integrated circuit designer listed in supplement no. 6 to part 740 of the EAR, the ''front-end fabricator'' or ''OSAT'' company must presume that any logic integrated circuit produced using the ''16/14 nanometer node'' or below, or using a non-planar transistor architecture and destined for a commodity with an (a) ''aggregated approximated transistor count'' of the final packaged IC is below 30 billion transistors, or (b) the final packaged IC does not contain high-bandwidth memory and that the ''aggregated approximated transistor count'' of the final packaged IC is below (i) 35 billion transistors for any exports, reexports, or transfers (in-country) completed in 2027; or (ii) 40 billion transistors for any exports, reexports, or transfers (in-country) completed in 2029 or thereafter, or where the ''aggregated approximated transistor count,'' of the final, packaged integrated circuit cannot be confirmed by the ''front-end fabricator,'' or an approved ''OSAT'' company listed in supplement no. 7 to part 740 of the EAR, is specified in ECCN 3A090.a and designed or marketed for a datacenter.

Technical Note 1 to 3A090.a: *The 'approximated transistor count' of a die is the 'transistor density' of the die multiplied by the area of the die measured in square millimeters. The 'transistor density' of the die is the number of transistors that can be fabricated per square millimeter for the process node used to manufacture the die. To calculate the number of 'approximated transistor count' of a die, a ''front end fabricator'' or ''OSAT'' company has two options. First, the ''front end fabricator'' or ''OSAT'' company may take the transistor density of the process node used to manufacture the die and multiply this density by the area of the die. This number may be significantly higher than the true transistor count, but if the result is below the relevant transistor threshold, then the ''front end fabricator'' or ''OSAT'' company can be confident that the die in question will not exceed that threshold. Second, to adjudicate edge cases, the ''front end fabricator'' or ''OSAT'' company may use standard design verification tools to estimate the number of (both active and passive) transistors on the die using the GDS file.*

b. Integrated circuits having one or more digital processing units having either of the following:

b.1. A 'total processing performance' of 2400 or more and less than 4800 and a 'performance density' of 1.6 or more and less than 5.92, or

b.2. A 'total processing performance' of 1600 or more and a 'performance density' of 3.2 or more and less than 5.92.

Note 2 to 3A090.a and 3A090.b: *3A090.a and 3A090.b do not apply to items that are not designed or marketed for use in datacenters and do not have a 'total processing performance' of 4800 or more. For 3A090.a and 3A090.b items that are not designed or marketed for use in datacenters and that have a 'total processing performance' of 4800 or more, see license exceptions NAC and ACA.*

Note 3 to 3A090.a and 3A090.b: *Integrated circuits specified by 3A090 include graphical processing units (GPUs), tensor processing units (TPUs), neural processors, in-memory processors, vision processors, text processors, co-processors/accelerators, adaptive processors, field-programmable logic devices (FPLDs), and application-specific integrated circuits (ASICs). Examples of integrated circuits are in the Note to 3A001.a.*

Note 4 to 3A090.a and 3A090.b: *For integrated circuits that are excluded from ECCN 3A090 under Note 2 or 3 to 3A090, those ICs are also not applicable for classifications made under ECCNs 3A001.z, 4A003.z, 4A004.z, 4A005.z, 4A090, 5A002.z, 5A004.z, 5A992.z, 5D002.z, or 5D992.z because those other CCL classifications are based on the incorporation of an integrated*

circuit that meets the control parameters under ECCN 3A090 or otherwise meets or exceeds the control parameters or ECCNs 3A090 or 4A090. The performance parameters under ECCN 3A090.c are not used for determining whether an item is classified in a .z ECCN. See the Related Controls paragraphs of ECCNs 3A001.z, 4A003.z, 4A004.z, 4A005.z, 4A090, 5A002.z, 5A004.z, 5A992.z, 5D002.z, or 5D992.z.

Technical Note 2 to 3A090.a and 3A090.b:

1. 'Total processing performance' ('TPP') is 2 × 'MacTOPS' × 'bit length of the operation', aggregated over all processing units on the integrated circuit.

a. For purposes of 3A090, 'MacTOPS' is the theoretical peak number of Tera (10^{12}) operations per second for multiply-accumulate computation (D = A × B + C).

b. The 2 in the 'TPP' formula is based on industry convention of counting one multiply-accumulate computation, D = A × B + C, as 2 operations for purpose of datasheets. Therefore, 2 × MacTOPS may correspond to the reported TOPS or FLOPS on a datasheet.

c. For purposes of 3A090, 'bit length of the operation' for a multiply-accumulate computation is the largest bit-length of the inputs to the multiply operation.

d. Aggregate the TPPs for each processing unit on the integrated circuit to arrive at a total. 'TPP' = TPP1 + TPP2 + ... + TPPn (where n is the number or processing units on the integrated circuit).

2. The rate of 'MacTOPS' is to be calculated at its maximum value theoretically possible. The rate of 'MacTOPS' is assumed to be the highest value the manufacturer claims in a manual or brochure for the integrated circuit. For example, the 'TPP' threshold of 4800 can be met with 600 tera integer operations (or 2 × 300 'MacTOPS') at 8 bits or 300 tera FLOPS (or 2 × 150 'MacTOPS') at 16 bits. If the integrated circuit is designed for MAC computation with multiple bit lengths that achieve different 'TPP' values, the highest 'TPP' value should be evaluated against parameters in 3A090.

3. For integrated circuits specified by 3A090 that provide processing of both sparse and dense matrices, the 'TPP' values are the values for processing of dense matrices (e.g., without sparsity).

4. 'Performance density' is 'TPP' divided by 'applicable die area'. For purposes of 3A090, 'applicable die area' is measured in millimeters squared and includes all die area of logic dies manufactured with a process node that uses a non-planar transistor architecture.

c. High bandwidth memory (HBM) having a 'memory bandwidth density' greater than 2 gigabytes per second per square millimeter.

Technical Note 1 to 3A090.c: *'Memory bandwidth density' is the memory bandwidth measured in gigabytes per second divided by the area of the package or stack measured in square millimeters. In the case where a stack is contained in a package, use the memory bandwidth of the packaged device and the area of the package. High bandwidth memory (HBM) includes dynamic random access memory integrated circuits, regardless of whether they conform to the JEDEC standards for high bandwidth memory (HBM), provided they have a 'memory bandwidth density' greater than 2 gigabytes per second per square millimeter. This control does not cover co-packaged integrated circuits with both HBM and logic integrated circuit where the dominant function of the co-packaged integrated circuit is processing. It does include HBM permanently affixed to a logic integrated circuit designed as a control interface and incorporating a physical layer (PHY) function.*

* * * * *

3D001 ''Software'' ''specially designed'' for the ''development'' or ''production'' of commodities controlled by 3A001.b to 3A002.h, 3A090, or 3B (except 3B001.a.4, c, d, f.1, f.5, k to n, p.2, p.4, r, 3B002.c, 3B903, 3B904, 3B991, 3B992, 3B993, or 3B994).

License Requirements

Reason for Control: NS, RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
NS applies to ''software'' for equipment controlled by 3B001.q	Worldwide control. *See § 742.4(a)(5) and (b)(10) of the EAR.*
RS applies to ''software'' for equipment controlled by 3B001.q	Worldwide control. *See § 742.6(a)(10) and (b)(11) of the EAR.*
NS applies to ''software'' for commodities controlled by 3A001.b to 3A001.h, 3A001.z, and 3B (except as specified in the heading).	NS Column 1.
RS applies to ''software'' for commodities controlled by 3A001.z and 3A090 (except for 3A090.c).	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''software'' for commodities controlled by 3A001.z and 3A090 (except for 3A090.c).	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
RS applies to ''software'' for commodities controlled by 3A090.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)(i) of the EAR.
AT applies to entire entry	AT Column 1.

Reporting Requirements

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

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

TSR: Yes, except 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; or commodities specified in 3A090.

ACM: Yes for ''software'' for commodities controlled by 3A001.z or 3A090

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 3D001 ''software'' for commodities controlled by 3A001.z and 3A090.*

IEC: Yes, for ''software'' for equipment controlled by 3B001.q, see § 740.2(a)(22) and § 740.24 of the EAR.

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 3A090.a or 3B001.q to any of the destinations listed in Country Group A:5 or A:6 (See Supplement No.1 to part 740 of the EAR); and 3A090.b or 3A002.g.1 to any of the destinations listed in Country Group A:6.

List of Items Controlled

Related Controls: N/A
Related Definitions: N/A
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 3A069, 3A901, 3A904, 3A980, 3A981, 3A991, 3A992, or 3A999), 3B (except 3B001.a.4, c, d, f.1, f.5, k to n, p.2, p.4, r, 3B002.c, 3B903, 3B904, 3B991, 3B992, 3B993, or 3B994) or 3C (except 3C907, 3C908, 3C909, or 3C992).

License Requirements

Reason for Control: NS, MT, NP, RS, AT

Control(s)	Country chart (see Supp. No. 1 to part 738)
NS applies to ''technology'' for commodities controlled by 3A001, 3A002, 3A003, 3B001 (except as noted in the heading), 3B002 (except 3B002.c), or 3C001 to 3C006.	NS Column 1.
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 in 3A090, when exported from Macau or a destination specified in Country Group D:5.	Worldwide (see § 742.6(a)(6)(ii)).
RS applies to ''technology'' for commodities controlled by 3A001.z, 3A090 (except for 3A090.c).	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''technology'' for commodities controlled by 3A001.z, 3A090 (except for 3A090.c).	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
RS applies to ''technology'' for commodities controlled by 3A090.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)(i)(B) of the EAR.
RS applies to ''technology'' for commodities controlled by 3A001.a.15 or b.13, 3A004, 3B003, 3C007, 3C008, or 3C009.	RS Column 2.
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 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, 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; (d) discrete microwave transistors in 3A001.b.3; and (e) commodities described in 3A090.

ACM: Yes for ''technology'' for commodities controlled by 3A001.z or 3A090.

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 3E001 ''technology'' for commodities controlled by 3A001.z, 3A090.*

IEC: Yes, for ''technology'' for equipment controlled by 3B001.q, see § 740.2(a)(22) and § 740.24 of the EAR.

Special Conditions for Strategic Trade Authorization (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 listed 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, b.3, commodities specified in 3A090, to any of the destinations listed 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 ECCNs 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 or z, having all of the following:*

(a) Using ''technology'' at or above 0.130 µm; and

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

* * * * *

4A003 Digital computers'', ''electronic assemblies'', and related equipment therefor, as follows (see List of Items Controlled) and ''specially designed'' ''components'' therefor.

License Requirements

Reason for Control: NS, RS, CC, AT

Control(s)	Country chart (see Supp. No. 1 to part 738)
NS applies to 4A003.b, .c, and .z.1	NS Column 1.
NS applies to 4A003.g and z.2	NS Column 2.
RS applies to 4A003.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to 4A003.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
CC applies to ''digital computers'' for computerized finger-print equipment.	CC Column 1.

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
AT applies to entire entry (refer to 4A994 for controls on ''digital computers'' with an APP >0.0128 but ≤70 WT).	AT Column 1.

Note: *For all destinations, except those countries in Country Group E:1 or E:2 of Supplement No. 1 to part 740 of the EAR, no license is required (NLR) for computers with an ''Adjusted Peak Performance'' (''APP'') not exceeding 70 Weighted TeraFLOPS (WT) and for ''electronic assemblies'' described in 4A003.c that are not capable of exceeding an ''Adjusted Peak Performance'' (''APP'') exceeding 70 Weighted TeraFLOPS (WT) in aggregation, except certain transfers as set forth in § 746.3 (Iraq).*

Reporting Requirements

Special Post Shipment Verification reporting and recordkeeping requirements for exports of computers to destinations in Computer Tier 3 may be found in § 743.2 of the EAR.

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

LVS: $5000; N/A for 4A003.b, c, and z.
GBS: Yes, for 4A003.g and ''specially designed'' ''parts'' and ''components'' therefor, exported separately or as part of a system.
APP: Yes, for computers controlled by 4A003.b, and ''electronic assemblies'' controlled by 4A003.c, to the exclusion of other technical parameters. See § 740.7 of the EAR.
NAC/ACA: Yes, for 4A003.z.
ACM: Yes for 4A003.z

Note to List Based License Exceptions:
See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 4A003.z.

List of Items Controlled

Related Controls: See also ECCNs 4A090, 4A994 and 4A980.
Related Definitions: N/A
Items:

Note 1: *4A003 includes the following:*

—'3Vector processors' (as defined in Note 7 of the ''Technical Note on ''Adjusted Peak Performance'' (''APP'')'');
—Array processors;
—Digital signal processors;
—Logic processors;
—Equipment designed for ''image enhancement.''

Note 2: *The control status of the ''digital computers'' and related equipment described in 4A003 is determined by the control status of other equipment or systems provided:*

a. The ''digital computers'' or related equipment are essential for the operation of the other equipment or systems;

b. The ''digital computers'' or related equipment are not a ''principal element'' of the other equipment or systems; and

N.B. 1: The control status of ''signal processing'' or ''image enhancement'' equipment ''specially designed'' for other equipment with functions limited to those required for the other equipment is determined by the control status of the other equipment even if it exceeds the ''principal element'' criterion.

N.B. 2: For the control status of ''digital computers'' or related equipment for telecommunications equipment, see Category 5, Part 1 (Telecommunications).

c. The ''technology'' for the ''digital computers'' and related equipment is determined by 4E.

a. [Reserved]

b. ''Digital computers'' having an ''Adjusted Peak Performance'' (''APP'') exceeding 70 Weighted TeraFLOPS (WT);

c. ''Electronic assemblies'' ''specially designed'' or modified to be capable of enhancing performance by aggregation of processors so that the ''APP'' of the aggregation exceeds the limit in 4A003.b.;

Note 1: *4A003.c applies only to ''electronic assemblies'' and programmable interconnections not exceeding the limit in 4A003.b when shipped as unintegrated ''electronic assemblies.''*

Note 2: *4A003.c does not control ''electronic assemblies'' ''specially designed'' for a product or family of products whose maximum configuration does not exceed the limit of 4A003.b.*

d. to f. [Reserved]

N.B.: For ''electronic assemblies,'' modules or equipment, performing analog-to-digital conversions, see 3A002.h.

g. Equipment ''specially designed'' for aggregating the performance of ''digital computers'' by providing external interconnections which allow communications at unidirectional data rates exceeding 2.0 Gbyte/s per link.

Note: *4A003.g does not control internal interconnection equipment (e.g., backplanes, buses) passive interconnection equipment, ''network access controllers'' or ''communication channel controllers''.*

h. through y. [Reserved]

z. Commodities specified in this ECCN 4A003 that also meet or exceed the performance parameters in 4A090.

z.1.a. Commodities specified in 4A003.b or .c that also meet or exceed the performance parameters in ECCN 4A090.a;

z.1.b Commodities specified in 4A003.b or .c that also meet or exceed the performance parameters in ECCN 4A090.b;

z.2.a. Commodities specified in 4A003.g that also meet or exceed the performance parameters in ECCN 4A090a; or

z.2.b Commodities specified in 4A003.g that also meet or exceed the performance parameters in ECCN 4A090.b.

* * * * *

4A004 Computers as follows (see List of Items Controlled) and ''specially designed'' related equipment, ''electronic assemblies'' and ''components'' therefor.

License Requirements

Reason for Control: NS, RS, AT

Control(s)	Country chart *(see Supp. No. 1 to part 738)*
NS applies to entire entry	NS Column 2.
RS applies to 4A004.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to 4A004.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
AT applies to entire entry	AT Column 1.

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

LVS: $5000, N/A for 4A004.z
GBS: N/A
NAC/ACA: Yes, for 4A004.z.
ACM: Yes for 4A004.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 4A004.z.*

List of Items Controlled

Related Controls: See also ECCN 4A090.
Related Definitions: N/A
Items:

a. 'Systolic array computers';
b. 'Neural computers';
c. 'Optical computers'.

Technical Notes:

1. For the purposes of 4A004.a, 'systolic array computers' are computers where the flow and modification of the data is

dynamically controllable at the logic gate level by the user.

2. For the purposes of 4A004.b, 'neural computers' are computational devices designed or modified to mimic the behavior of a neuron or a collection of neurons, i.e., computational devices which are distinguished by their hardware capability to modulate the weights and numbers of the interconnections of a multiplicity of computational components based on previous data.

3. For the purposes of 4A004.c, 'optical computers' are computers designed or modified to use light to represent data and whose computational logic elements are based on directly coupled optical devices.

d. through y. [Reserved]

z.1. Commodities that are described in 4A004 and that also meet or exceed the performance parameters in 4A090.a; or

z.2 Commodities that are described in 4A004 and that also meet or exceed the performance parameters in 4A090.b.

* * * * *

4A005 Systems,'' ''equipment,'' and ''components'' therefor, ''specially designed'' or modified for the generation, command and control, or delivery of ''intrusion software'' (see List of Items Controlled).

License Requirements

Reason for Control: NS, RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
NS applies to entire entry	NS Column 1.
RS applies to items controlled by 4A005.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to items controlled by 4A005.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or 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, and Validated End-User authorizations.

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

LVS: N/A
GBS: N/A
APP: N/A
ACE: Yes, except to Country Group E:1 or E:2. See § 740.22 of the EAR for eligibility criteria.
NAC/ACA: Yes, for 4A005.z.
ACM: Yes for 4A005.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 4A005.z.*

Special Conditions for STA

STA: License Exception STA may not be used to ship items specified by ECCN 4A005.

List of Items Controlled

Related Controls: (1) Defense articles described in USML Category XI(b), and software directly related to a defense article, are ''subject to the ITAR'' (see 22 CFR parts 120 through 130). (2) See also ECCN 4A090.
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading, except for the commodities controlled under 4A005.z.

a. through y. [Reserved]

z.1. Commodities that are specified in 4A005 that also meet or exceed the performance parameters in 4A090.a.

z.2 Commodities that are specified in 4A005 that also meet or exceed the performance parameters in 4A090.b.

* * * * *

4A090 Computers as follows (see List of Items Controlled) and related equipment, ''electronic assemblies,'' and ''components'' therefor.

License Requirements

Reason for Control: RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
RS applies to 4A090	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to 4A090	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
AT applies to entire entry	AT Column 1.

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

LVS: N/A
GBS: N/A
NAC/ACA: Yes
ACM: Yes

List of Items Controlled

Related Controls: (1) For associated ''software'' for commodities in this ECCN, see 4D090, 5D002.z, and 5D992.z and for associated ''technology'' for commodities in this ECCN, see 4E001. (2) Also ECCNs 4A003.z, 4A004.z, 4A005.z, 5A002.z, 5A004.z, and 5A992.z.
Related Definitions: N/A
Items:

a. Computers, ''electronic assemblies,'' and ''components'' containing integrated circuits, any of which meets or exceeds the limits in 3A090.a.

b. Computers, ''electronic assemblies,'' and ''components'' containing integrated circuits, any of which meets or exceeds the limits in 3A090.b.

Technical Note: *For purposes of 4A090.a and .b, computers include ''digital computers,'' ''hybrid computers,'' and analog computers.*

* * * * *

4D001 ''Software'' as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, RS, CC, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
NS applies to entire entry	NS Column 1.

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
RS applies to ''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z.	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z.	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
CC applies to ''software'' for computerized finger-print equipment controlled by 4A003 for CC reasons.	CC Column 1.
AT applies to entire entry	AT Column 1.

Reporting Requirements

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

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

TSR: Yes, except for ''software'' for the following:

(1) The ''development'' or ''production'' of commodities with an ''Adjusted Peak Performance'' (''APP'') exceeding 29 WT;

(2) The ''development'' or ''production'' of commodities controlled by 4A005 or ''software'' controlled by 4D004; or

(3) Commodities controlled by 4A003.z, 4A004.z, and 4A005.z

APP: Yes to specific countries (see § 740.7 of the EAR for eligibility criteria).

ACE: Yes for 4D001.a (for the ''development'', ''production'' or ''use'' of equipment or ''software'' specified in ECCN 4A005 or 4D004), except to Country Group E:1 or E:2. See § 740.22 of the EAR for eligibility criteria.

ACM: Yes for ''software'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z

Note: *See § 740.2(a)(9)(ii) for license exception restrictions for ''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z.*

Special Conditions for STA

STA: License Exception STA may not be used to ship or transmit ''software'' ''specially designed'' or modified for the ''development'' or ''production'' of equipment specified by ECCN 4A001.a.2 or for the ''development'' or ''production'' of ''digital computers'' having an 'Adjusted Peak Performance' ('APP') exceeding 29 Weighted TeraFLOPS (WT) to any of the destinations listed in Country Group A:6 (See Supplement No. 1 to part 740 of the EAR); may not be used to ship or transmit ''software'' specified in 4D001.a ''specially designed'' for the ''development'' or ''production'' of equipment specified by ECCN 4A005; and may not be used to ship or transmit ''software'' for commodities controlled by 4A003.z.1.a, z.2.a, 4A004.z.1, and 4A005.z.1 to any of the destinations listed in Country Group A:5 or A:6.

List of Items Controlled

Related Controls: N/A

Related Definitions: N/A

Items:

a. ''Software'' ''specially designed'' or modified for the ''development'' or ''production'', of equipment or ''software'' controlled by 4A001, 4A003, 4A004, 4A005 or 4D (except 4D090, 4D906, 4D980, 4D993 or 4D994).

b. ''Software'', other than that controlled by 4D001.a, ''specially designed'' or modified for the ''development'' or ''production'' of equipment as follows:

b.1. ''Digital computers'' having an ''Adjusted Peak Performance'' (''APP'') exceeding 24 Weighted TeraFLOPS (WT);

b.2. ''Electronic assemblies'' ''specially designed'' or modified for enhancing performance by aggregation of processors so that the ''APP'' of the aggregation exceeds the limit in 4D001.b.1.

* * * * *

4D090 ''Software'' ''specially designed'' or modified for the ''development'' or ''production,'' of computers and related equipment, ''electronic assemblies,'' and ''components'' therefor specified in ECCN 4A090.

License Requirements

Reason for Control: RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
RS applies to ''software'' for commodities controlled by 4A090	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''software'' for commodities controlled by 4A090	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
AT applies to entire entry	AT Column 1.

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

TSR: N/A

ACM: Yes

List of Items Controlled

Related Controls: For associated ''technology'' for software in this ECCN, see 4E001.

Related Definitions: N/A

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

* * * * *

4E001 ''Technology'' as follows (see List of Items Controlled)

License Requirements

Reason for Control: NS, MT, RS, CC, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
NS applies to entire entry, except for ''technology'' for 4A090 or ''software'' specified by 4D090.	NS Column 1.
MT applies to ''technology'' for items controlled by 4A001.a and 4A101 for MT reasons.	MT Column 1.
RS applies to ''technology'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z, 4A090 or ''software'' specified by 4D001 (for 4A003.z, 4A004.z and 4A005.z), or 4D090.	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.

Control(s)	Country chart (see Supp. No. 1 to part 738)
RS applies to ''technology'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z, 4A090 or ''software'' specified by 4D001 (for 4A003.z, 4A004.z, and 4A005.z), or 4D090.	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
CC applies to ''technology'' for computerized finger-print equipment controlled by 4A003 for CC reasons.	CC Column 1.
AT applies to entire entry	AT Column 1.

Reporting Requirements

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

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

TSR: Yes, except for the following:

(1) ''Technology'' for the ''development'' or ''production'' of commodities with an ''Adjusted Peak Performance'' (''APP'') exceeding 70 WT or for the ''development'' or ''production'' of commodities controlled by 4A005 or ''software'' controlled by 4D004;

(2) ''Technology'' for the ''development'' of ''intrusion software''; or

(3) ''Technology'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z, 4A090 or ''software'' specified by 4D001 (for 4A003.z, 4A004.z, and 4A005.z), or 4D090

APP: Yes, to specific countries (see § 740.7 of the EAR for eligibility criteria).

ACE: Yes for 4E001.a (for the ''development'', ''production'' or ''use'' of equipment or ''software'' specified in ECCN 4A005 or 4D004); and for 4E001.c, except to Country Group E:1 or E:2. See § 740.22 of the EAR for eligibility criteria.

ACM: Yes for ''technology'' for commodities controlled by 4A003.z, 4A004.z, 4A005.z, 4A090 or ''software'' specified by 4D001 (for 4A003.z, 4A004.z and 4A005.z), or 4D090.

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for technology for .z paragraphs under ECCNs 4A003, 4A004, 4A005 or 4A090, or ''software'' specified by 4D001 (for 4A003.z, 4A004.z, 4A005.z, and 4A090).*

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 any of the following equipment or ''software'': a. Equipment specified by ECCN 4A001.a.2; b. ''Digital computers'' having an 'Adjusted Peak Performance' ('APP') exceeding 70 Weighted TeraFLOPS (WT); c. ''software'' specified in the License Exception STA paragraph found in the License Exception section of ECCN 4D001; or ''technology'' for commodities controlled by 4A003.z.1.b, z.2.b, 4A004.z.2, 4A005.z.2, 4A090.b or ''software'' specified by 4D001 (for 4A003.z.1.b, z.2.b, 4A004.z.2, and 4A005.z.2), or 4D090.b to any of the destinations listed 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'' for commodities controlled by 4A003.z.1.a, z.2.a, 4A004.z.1, 4A005.z.1, 4A090.a or ''software'' specified by 4D001 (for 4A003.z.1.a, z.2.a, 4A004.z.1 and 4A005.z.1), or 4D090.a to any of the destinations listed in Country Group A:5 or 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:

a. ''Technology'' according to the General Technology Note, for the ''development'', ''production'', or ''use'' of equipment or ''software'' controlled by 4A (except 4A906, 4A980 or 4A994 and ''use'' of equipment controlled under 4A090) or 4D (except 4D906, 4D980, 4D993, 4D994 and ''use'' of software controlled under 4D090).

b. ''Technology'' according to the General Technology Note, other than that controlled by 4E001.a, for the ''development'' or ''production'' of equipment as follows:

b.1. ''Digital computers'' having an ''Adjusted Peak Performance'' (''APP'') exceeding 24 Weighted TeraFLOPS (WT);

b.2. ''Electronic assemblies'' ''specially designed'' or modified for enhancing performance by aggregation of processors so that the ''APP'' of the aggregation exceeds the limit in 4E001.b.1.

c. ''Technology'' for the ''development'' of ''intrusion software.''

Note 1: *4E001.a and .c do not apply to ''vulnerability disclosure'' or ''cyber incident response''.*

Note 2: *Note 1 does not diminish national authorities' rights to ascertain compliance with 4E001.a and .c.*

* * * * *

5A002 ''Information security'' systems, equipment and ''components,'' as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, RS, AT, EI

Control(s)	Country chart (see Supp. No. 1 to part 738)
NS applies to entire entry	NS Column 1.
RS applies to items controlled by 5A002.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to items controlled by 5A002.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
AT applies to entire entry	AT Column 1.
EI applies to entire entry	Refer to § 742.15 of the EAR.

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)

LVS: Yes: $500 for ''components,'' N/A for systems and equipment. N/A for 5A002.z.

GBS: N/A

ENC: Yes for certain EI controlled commodities, see § 740.17 of the EAR for eligibility.

NAC/ACA: Yes, for 5A002.z.1.b, z.2.b

ACM: Yes for 5A002.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 5A002.z.*

List of Items Controlled

Related Controls: (1) ECCN 5A002.a controls ''components'' providing the means or functions necessary for ''information security.'' All such ''components'' are presumptively ''specially designed'' and controlled by 5A002.a. (2) See USML Categories XI (including XI(b)) and XIII(b)

(including XIII(b)(2)) for controls on systems, equipment, and components described in 5A002.d or .e that are ''subject to the ITAR'' (see 22 CFR parts 120 through 130). (3) For ''satellite navigation system'' receiving equipment containing or employing decryption see 7A005, and for related decryption ''software'' and ''technology'' see 7D005 and 7E001. (4) Noting that items may be controlled elsewhere on the CCL, examples of items not controlled by ECCN 5A002.a.4 include the following: (a) An automobile where the only 'cryptography for data confidentiality' having a 'described security algorithm' is performed by a Category 5—Part 2 Note 3 eligible mobile telephone that is built into the car. In this case, secure phone communications support a non-primary function of the automobile but the mobile telephone (equipment), as a standalone item, is not controlled by ECCN 5A002 because it is excluded by the Cryptography Note (Note 3) (See ECCN 5A992.c). (b) An exercise bike with an embedded Category 5—Part 2 Note 3 eligible web browser, where the only controlled cryptography is performed by the web browser. In this case, secure web browsing supports a non-primary function of the exercise bike but the web browser (''software''), as a standalone item, is not controlled by ECCN 5D002 because it is excluded by the Cryptography Note (Note 3) (See ECCN 5D992.c). (5) After classification or self-classification in accordance with § 740.17(b) of the EAR, mass market encryption commodities that meet eligibility requirements are released from ''EI'' and ''NS'' controls. These commodities are designated 5A992.c. (6) See also ECCNs 3A090 and 4A090.

Related Definitions: N/A

Items:

a. Designed or modified to use 'cryptography for data confidentiality' having a 'described security algorithm', where that cryptographic capability is usable, has been activated, or can be activated by any means other than secure ''cryptographic activation'', as follows:

a.1. Items having ''information security'' as a primary function;

a.2. Digital communication or networking systems, equipment or components, not specified in paragraph 5A002.a.1;

a.3. Computers, other items having information storage or processing as a primary function, and components therefor, not specified in paragraphs 5A002.a.1 or .a.2;

N.B.: For operating systems see also 5D002.a.1 and .c.1.

a.4. Items, not specified in paragraphs 5A002.a.1 to a.3, where the 'cryptography for data confidentiality' having a 'described security algorithm' meets all of the following:

a.4.a. It supports a non-primary function of the item; *and*

a.4.b. It is performed by incorporated equipment or ''software'' that would, as a standalone item, be specified by ECCNs 5A002, 5A003, 5A004, 5B002 or 5D002.

N.B. to paragraph a.4: See Related Control Paragraph (4) of this ECCN 5A002 for examples of items not controlled by 5A002.a.4.

Technical Notes:

1. For the purposes of 5A002.a, 'cryptography for data confidentiality' means ''cryptography'' that employs digital techniques and performs any cryptographic function other than any of the following:

1.a. ''Authentication;''

1.b. Digital signature;

1.c. Data integrity;

1.d. Non-repudiation;

1.e. Digital rights management, including the execution of copy-protected ''software;''

1.f. Encryption or decryption in support of entertainment, mass commercial broadcasts or medical records management; or

1.g. Key management in support of any function described in paragraphs 1.a to 1.f of this Technical Note paragraph 1.

2. For the purposes of 5A002.a, 'described security algorithm' means any of the following:

2.a. A ''symmetric algorithm'' employing a key length in excess of 56 bits, not including parity bits;

2.b. An ''asymmetric algorithm'' where the security of the algorithm is based on any of the following:

2.b.1. Factorization of integers in excess of 512 bits (e.g., RSA);

2.b.2. Computation of discrete logarithms in a multiplicative group of a finite field of size greater than 512 bits (e.g., Diffie-Hellman over Z/pZ); or

2.b.3. Discrete logarithms in a group other than mentioned in paragraph 2.b.2 of this Technical Note in excess of 112 bits (e.g., Diffie-Hellman over an elliptic curve); or

2.c. An ''asymmetric algorithm'' where the security of the algorithm is based on any of the following:

2.c.1. Shortest vector or closest vector problems associated with lattices (e.g., NewHope, Frodo, NTRUEncrypt, Kyber, Titanium);

2.c.2. Finding isogenies between Supersingular elliptic curves (e.g., Supersingular Isogeny Key Encapsulation); or

2.c.3. Decoding random codes (e.g., McEliece, Niederreiter).

Technical Note: *An algorithm described by Technical Note 2.c. may be referred to as being post-quantum, quantum-safe or quantum-resistant.*

Note 1: *Details of items must be accessible and provided upon request, in order to establish any of the following:*

a. Whether the item meets the criteria of 5A002.a.1 to a.4; or

b. Whether the cryptographic capability for data confidentiality specified by 5A002.a is usable without ''cryptographic activation.''

Note 2: *5A002.a does not control any of the following items, or specially designed ''information security'' components therefor:*

a. Smart cards and smart card 'readers/writers' as follows:

a.1. A smart card or an electronically readable personal document (e.g., token coin, e-passport) that meets any of the following:

a.1.a. The cryptographic capability meets all of the following:

a.1.a.1. It is restricted for use in any of the following:

a.1.a.1.a. Equipment or systems, not described by 5A002.a.1 to a.4;

a.1.a.1.b. Equipment or systems, not using 'cryptography for data confidentiality' having a 'described security algorithm'; or

a.1.a.1.c. Equipment or systems, excluded from 5A002.a by entries b. to f. of this Note; and

a.1.a.2. It cannot be reprogrammed for any other use; or

a.1.b. Having all of the following:

a.1.b.1. It is specially designed and limited to allow protection of 'personal data' stored within;

a.1.b.2. Has been, or can only be, personalized for public or commercial transactions or individual identification; and

a.1.b.3. Where the cryptographic capability is not user-accessible;

Technical Note to paragraph a.1.b.1 of Note 2: *For the purposes of 5A002.a Note 2.a.1.b.1, 'personal data' includes any data specific to a particular person or entity, such as the amount of money stored and data necessary for ''authentication.''*

a.2. 'Readers/writers' specially designed or modified, and limited, for items specified by paragraph a.1 of this Note;

Technical Note to paragraph a.2 of Note 2: *For the purposes of 5A002.a Note 2.a.2, 'readers/writers' include equipment that communicates with smart cards or electronically readable documents through a network.*

b. Cryptographic equipment specially designed and limited for banking use or 'money transactions';

Technical Note to paragraph b. of Note 2: *For the purposes of 5A002.a Note 2.b, 'money transactions' in 5A002 Note 2 paragraph b. includes the collection and settlement of fares or credit functions.*

c. Portable or mobile radiotelephones for civil use (e.g., for use with commercial civil cellular radio communication systems) that are not capable of transmitting encrypted data directly to another radiotelephone or equipment (other than Radio Access Network (RAN) equipment), nor of passing encrypted data through RAN equipment (e.g., Radio Network Controller (RNC) or Base Station Controller (BSC));

d. Cordless telephone equipment not capable of end-to-end encryption where the maximum effective range of unboosted cordless operation (i.e., a single, unrelayed hop between terminal and home base station) is less than 400 meters according to the manufacturer's specifications;

e. Portable or mobile radiotelephones and similar client wireless devices for civil use, that implement only published or commercial cryptographic standards (except for anti-piracy functions, which may be non-published) and also meet the provisions of paragraphs a.2 to a.4 of the Cryptography Note (Note 3 in Category 5—Part 2), that have been customized for a specific civil industry application with features that do not affect the cryptographic functionality of these original non-customized devices;

f. Items, where the ''information security'' functionality is limited to wireless ''personal area network'' functionality implementing only published or commercial cryptographic standards;

g. Mobile telecommunications Radio Access Network (RAN) equipment designed

for civil use, which also meet the provisions of paragraphs a.2 to a.4 of the Cryptography Note (Note 3 in Category 5—Part 2), having an RF output power limited to 0.1W (20 dBm) or less, and supporting 16 or fewer concurrent users;

h. Routers, switches, gateways or relays, where the ''information security'' functionality is limited to the tasks of ''Operations, Administration or Maintenance'' (''OAM'') implementing only published or commercial cryptographic standards;

i. General purpose computing equipment or servers, where the ''information security'' functionality meets all of the following:

i.1. Uses only published or commercial cryptographic standards; and

i.2. Is any of the following:

i.2.a. Integral to a CPU that meets the provisions of Note 3 in Category 5—Part 2;

i.2.b. Integral to an operating system that is not specified by 5D002; or

i.2.c. Limited to ''OAM'' of the equipment; or

j. Items specially designed for a 'connected civil industry application', meeting all of the following:

j.1. Being any of the following:

j.1.a. A network-capable endpoint device meeting any of the following:

j.1.a.1. The ''information security'' functionality is limited to securing 'non-arbitrary data' or the tasks of ''Operations, Administration or Maintenance'' (''OAM''); or

j.1.a.2. The device is limited to a specific 'connected civil industry application'; or

j.1.b. Networking equipment meeting all of the following:

j.1.b.1. Being specially designed to communicate with the devices specified by paragraph j.1.a. above; and

j.1.b.2. The ''information security'' functionality is limited to supporting the 'connected civil industry application' of devices specified by paragraph j.1.a. above, or the tasks of ''OAM'' of this networking equipment or of other items specified by paragraph j. of this Note; and

j.2. Where the ''information security'' functionality implements only published or commercial cryptographic standards, and the cryptographic functionality cannot easily be changed by the user.

Technical Notes:

1. For the purposes of 5A002.a Note 2.j, 'connected civil industry application' means a network-connected consumer or civil industry application other than ''information security'', digital communication, general purpose networking or computing.

2. For the purposes of 5A002.a Note 2.j.1.a.1, 'non-arbitrary data' means sensor or metering data directly related to the stability, performance or physical measurement of a system (e.g., temperature, pressure, flow rate, mass, volume, voltage, physical location, etc.), that cannot be changed by the user of the device.

b. Being a 'cryptographic activation token';

Technical Note: *For the purposes of 5A002.b, a 'cryptographic activation token' is an item designed or modified for any of the following:*

1. Converting, by means of ''cryptographic activation'', an item not specified by Category 5—Part 2 into an item specified by 5A002.a or 5D002.c.1, and not released by the Cryptography Note (Note 3 in Category 5—Part 2); or

2. Enabling by means of ''cryptographic activation'', additional functionality specified by 5A002.a of an item already specified by Category 5—Part 2;

c. Designed or modified to use or perform ''quantum cryptography'';

Technical Note: *For the purposes of 5A002.c, ''quantum cryptography'' is also known as Quantum Key Distribution (QKD).*

d. Designed or modified to use cryptographic techniques to generate channelizing codes, scrambling codes or network identification codes, for systems using ultra-wideband modulation techniques and having any of the following:

d.1. A bandwidth exceeding 500 MHz; *or*

d.2. A ''fractional bandwidth'' of 20% or more;

e. Designed or modified to use cryptographic techniques to generate the spreading code for ''spread spectrum'' systems, not specified by 5A002.d, including the hopping code for ''frequency hopping'' systems.

f. through y. [Reserved]

z. Other commodities, as follows:

z.1.a. Commodities that are described in 5A002.a and that also meet or exceed the performance parameters in 3A090.a or 4A090.a;

z.1.b Commodities that are described in 5A002.a and that also meet or exceed the performance parameters in 3A090.b or 4A090.b;

z.2.a Commodities that are described in 5A002.b and that also meet or exceed the performance parameters in 3A090.a or 4A090.a;

z.2.b Commodities that are described in 5A002.b and that also meet or exceed the performance parameters in 3A090.b or 4A090.b;

z.3.a Commodities that are described in 5A002.c and that also meet or exceed the performance parameters in 3A090.a or 4A090.a;

z.3.b Commodities that are described in 5A002.c and that also meet or exceed the performance parameters in 3A090.b or 4A090.b;

z.4.a Commodities that are described in 5A002.d and that also meet or exceed the performance parameters in 3A090.a or 4A090.a;

z.4.b Commodities that are described in 5A002.d and that also meet or exceed the performance parameters in 3A090.b or 4A090.b;

z.5.a Commodities that are described in 5A002.e and that also meet or exceed the performance parameters in 3A090.a or 4A090.a; or

z.5.b Commodities that are described in 5A002.e and that also meet or exceed the performance parameters in 3A090.b or 4A090.b.

5A992 Equipment not controlled by 5A002 (see List of Items Controlled)

License Requirements

Reason for Control: RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
RS applies to items controlled by 5A992.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to items controlled by 5A992.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
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)

LVS: N/A

GBS: N/A

NAC/ACA: Yes, for 5A992.z.2; N/A for all other 5A992 commodities.

ACM: Yes for 5A992.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 5A992.z.*

List of Items Controlled

Related Controls: See also ECCNs 3A090 and 4A090.

Related Definitions: N/A

Items:

a. [Reserved]

b. [Reserved]

c. Commodities classified as mass market encryption commodities in accordance with § 740.17(b) of the EAR.

d. through y. [Reserved]

z.1. Commodities that are described in 5A992.c and that also meet or exceed the performance parameters in 3A090.a or 4A090.a; or

z.2 Commodities that are described in 5A992.c and that also meet or exceed the performance parameters in 3A090.b or 4A090.b.

* * * * *

5A004 ''Systems,'' ''equipment'' and ''components'' for defeating, weakening or bypassing ''information security,'' as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, RS, AT, EI

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
NS applies to entire entry	NS Column 1.
RS applies to items controlled by 5A004.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to items controlled by 5A004.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
AT applies to entire entry	AT Column 1.
EI applies to entire entry	Refer to § 742.15 of the EAR.

License Requirements

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)

LVS: Yes: $500 for ''components''; N/A for 5A004.z. N/A for systems and equipment.
GBS: N/A
ENC: Yes for certain EI controlled commodities. See § 740.17 of the EAR for eligibility.
NAC/ACA: Yes, for 5A004.z.1.b, z.2.b
ACM: Yes for 5A004.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 5A004.z.*

List of Items Controlled

Related Controls: (1) ECCN 5A004.a controls ''components'' providing the means or functions necessary for ''information security.'' All such ''components'' are presumptively ''specially designed'' and controlled by 5A004.a. (2) See also ECCNs 3A090 and 4A090.

Related Definitions: N/A
Items:

a. Designed or modified to perform 'cryptanalytic functions.'

Note: *5A004.a includes systems or equipment, designed or modified to perform 'cryptanalytic functions' by means of reverse engineering.*

Technical Note: *For the purposes of 5A004.a, 'cryptanalytic functions' are functions designed to defeat cryptographic mechanisms in order to derive confidential variables or sensitive data, including clear text, passwords or cryptographic keys.*

b. Items, not specified by ECCNs 4A005 or 5A004.a, designed to perform all of the following:

b.1. 'Extract raw data' from a computing or communications device; *and*

b.2. Circumvent ''authentication'' or authorization controls of the device, in order to perform the function described in 5A004.b.1.

Technical Note: *For the purposes of 5A004.b.1, 'extract raw data' from a computing or communications device means to retrieve binary data from a storage medium, e.g., RAM, flash or hard disk, of the device without interpretation by the device's operating system or filesystem.*

Note 1: *5A004.b does not apply to systems or equipment specially designed for the ''development'' or ''production'' of a computing or communications device.*

Note 2: *5A004.b does not include:*

a. Debuggers, hypervisors;

b. Items limited to logical data extraction;

c. Data extraction items using chip-off or JTAG; or

d. Items specially designed and limited to jail-breaking or rooting.

c. through y. [Reserved]

z. Other commodities, as follows:

z.1.a Commodities that are described in 5A004.a and that also meet or exceed the performance parameters in 3A090.a or 4A090.a;

z.1.b Commodities that are described in 5A004.a and that also meet or exceed the performance parameters in 3A090.b or 4A090.b;

z.2.a Commodities that are described in 5A004.b and that also meet or exceed the performance parameters in 3A090.a or 4A090.a; or

z.2.b Commodities that are described in 5A004.b and that also meet or exceed the performance parameters in 3A090.b or 4A090.b.

* * * * *

5D002 ''Software'' as follows (see List of Items Controlled)

License Requirements

Reason for Control: NS, RS, AT, EI

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
NS applies to entire entry	NS Column 1.
RS applies to ''software'' controlled by 5D002.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''software'' controlled by 5D002.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
AT applies to entire entry	AT Column 1.
EI applies to ''software'' in 5D002.a.1, a.3, .b, c.1 and c.3, for commodities or ''software'' controlled for EI reasons in ECCN 5A002, 5A004 or 5D002.	Refer to § 742.15 of the EAR. *Note: Encryption software is controlled because of its functional capacity, and not because of any informational value of such software; such software is not accorded the same treatment under the EAR as other ''software''; and for export licensing purposes, encryption software is treated under the EAR in the same manner as a commodity included in ECCN 5A002.*

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: N/A
ENC: Yes for certain EI controlled software. See § 740.17 of the EAR for eligibility.
NAC/ACA: Yes, for 5D002.z.
ACM: Yes for 5D002.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 5D002.z.*

List of Items Controlled

Related Controls: (1) After classification or self-classification in accordance with § 740.17(b) of the EAR, mass market encryption software that meets eligibility requirements is released from ''EI'' and ''NS'' controls. This software is designated as 5D992.c. (2) See also ECCNs 3D001 as it applies to ''software'' for commodities controlled by 3A001.z and 3A090, and 4D001 as it applies to ''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z.
Related Definitions: 5D002.a controls ''software'' designed or modified to use ''cryptography'' employing digital or analog techniques to ensure ''information security.''
Items:

a. ''Software'' ''specially designed'' or modified for the ''development,'' ''production'' or ''use'' of any of the following:

a.1. Equipment specified by 5A002 or ''software'' specified by 5D002.c.1;

a.2. Equipment specified by 5A003 or ''software'' specified by 5D002.c.2; *or*

a.3. Equipment or ''software'', as follows:

a.3.a. Equipment specified by 5A004.a or ''software'' specified by 5D002.c.3.a;

a.3.b. Equipment specified by 5A004.b or ''software'' specified by 5D002.c.3.b;

b. ''Software'' having the characteristics of a 'cryptographic activation token' specified by 5A002.b;

c. ''Software'' having the characteristics of, or performing or simulating the functions of, any of the following:

c.1. Equipment specified by 5A002.a, .c, .d or .e;

Note: *5D002.c.1 does not apply to ''software'' limited to the tasks of ''OAM'' implementing only published or commercial cryptographic standards.*

c.2. Equipment specified by 5A003; *or*

c.3. Equipment, as follows:

c.3.a. Equipment specified by 5A004.a;

c.3.b. Equipment specified by 5A004.b.

Note: *5D002.c.3.b does not apply to ''intrusion software''.*

d. [Reserved]

N.B.: See 5D002.b for items formerly specified in 5D002.d.

e. through y. [Reserved]

z. Other software, as follows:

z.1.a Software that is described in 5D002.a.1, and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.1.b Software that is described in 5D002.a.1, and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.2.a Software that is described in 5D002.a.2, and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.2.b Software that is described in 5D002.a.2, and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.3.a Software that is described in 5D002.a.3a, and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.3.b Software that is described in 5D002.a.3a, and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.4.a Software that is described in 5D002.a.3.b, and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.4.b Software that is described in 5D002.a.3.b, and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.5.a Software that is described in 5D002.b and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.5.b Software that is described in 5D002.b and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.6.a Software that is described in 5D002.c.1 and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.6.b Software that is described in 5D002.c.1 and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.7.a Software that is described in 5D002.c.2 and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.7.b Software that is described in 5D002.c.2 and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.8.a Software that is described in 5D002.c.3.a and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a;

z.8.b Software that is described in 5D002.c.3.a and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b;

z.9.a Software that is described in 5D002.c.3.b and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a; or

z.9.b Software that is described in 5D002.c.3.b and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b.

5D992 ''Information Security'' ''software,'' not controlled by 5D002, as follows (see List of Items Controlled)

License Requirements

Reason for Control: RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
RS applies to ''software'' controlled by 5D992.z	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''software'' controlled by 5D992.z	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
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: N/A
NAC/ACA: Yes, for 5D992.z.
ACM: Yes for 5D992.z

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for ECCN 5D992.z.*

List of Items Controlled

Related Controls: (1) This entry does not control ''software'' designed or modified to protect against malicious computer damage, *e.g.,* viruses, where the use of ''cryptography'' is limited to authentication, digital signature and/or the decryption of data or files. (2) See also ECCNs 3D001 as it applies to ''software'' for commodities controlled by 3A001.z and 3A090, and 4D001 as it applies to

''software'' for commodities controlled by 4A003.z, 4A004.z, and 4A005.z.

Related Definitions: N/A

Items:

a. [Reserved]

b. [Reserved]

c. ''Software'' classified as mass market encryption software in accordance with § 740.17(b) of the EAR.

d. through y. [Reserved]

z.1 Other software that is described in 5D992 and that also meet or exceed the performance parameters in 3D001 for 3A090.a or 4D001 for 4A090.a; or

z.2 Other software that is described in 5D992 and that also meet or exceed the performance parameters in 3D001 for 3A090.b or 4D001 for 4A090.b.

* * * * *

5E002 ''Technology'' as follows (see List of Items Controlled)

License Requirements

Reason for Control: NS, RS, AT, EI

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
NS applies to entire entry	NS Column 1.
RS applies to ''technology'' for commodities controlled by 5A002.z or 5A004.z or ''software'' specified by 5D002 (for 5A002.z or 5A004.z commodities).	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''technology'' for commodities controlled by 5A002.z or 5A004.z or ''software'' specified by 5D002 (for 5A002.z or 5A004.z commodities).	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
AT applies to entire entry	AT Column 1.
EI applies to ''technology'' in 5E002.a for commodities or ''software'' controlled for EI reasons in ECCNs 5A002, 5A004 or 5D002, and to ''technology'' in 5E002.b.	Refer to § 742.15 of the EAR.

License Requirements Notes:

(1) 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.

(2) When a person performs or provides technical assistance that incorporates, or otherwise draws upon, ''technology'' that was either obtained in the United States or is of U.S.-origin, then a release of the ''technology'' takes place. Such technical assistance, when rendered with the intent to aid in the ''development'' or ''production'' of encryption commodities or software that would be controlled for ''EI'' reasons under ECCN 5A002, 5A004 or 5D002, may require authorization under the EAR even if the underlying encryption algorithm to be implemented is from the public domain or is not of U.S.-origin.

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

TSR: N/A

ENC: Yes for certain EI controlled technology. See § 740.17 of the EAR for eligibility.

ACM: Yes for ''technology'' for commodities controlled by 5A002.z or 5A004.z or ''software'' specified by 5D002 (for 5A002.z or 5A004.z commodities.

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for technology for .z paragraphs under ECCNs 5A002, 5A004 or ''software'' specified by 5D002 (for 5A002.z or 5A004.z commodities).*

List of Items Controlled

Related Controls: See also 5E992. This entry does not control ''technology'' ''required'' for the ''use'' of equipment excluded from control under the Related Controls paragraph or the Technical Notes in ECCN 5A002 or ''technology'' related to equipment excluded from control under ECCN 5A002.

Related Definitions: N/A

Items:

a. ''Technology'' according to the General Technology Note for the ''development,'' ''production'' or ''use'' of equipment controlled by 5A002, 5A003, 5A004 or 5B002, or of ''software'' controlled by 5D002.a, z.1 through z.3, or 5D002.c, z.6 through z.8.

Note: *5E002.a does not apply to ''technology'' for items specified by 5A004.b, z.3 or z.4, 5D002.a.3.b, z.4, or 5D002.c.3.b.*

b. ''Technology'' having the characteristics of a 'cryptographic activation token' specified by 5A002.b, z.2.

Note: *5E002 includes ''information security'' technical data resulting from procedures carried out to evaluate or determine the implementation of functions, features or techniques specified in Category 5—Part 2.*

5E992 ''Information Security'' ''Technology'' according to the general Technology Note, not controlled by 5E002, as follows (see List of Items Controlled)

License Requirements

Reason for Control: RS, AT

Control(s)	*Country chart (see Supp. No. 1 to part 738)*
RS applies to ''technology'' for commodities controlled by 5A992.z or ''software'' controlled by 5D992.z.	To or within any destination specified in § 742.6(a)(6)(iii)(A)(*1*) of the EAR.
RS applies to ''technology'' for commodities controlled by 5A992.z or ''software'' controlled by 5D992.z.	To or within the United Arab Emirates or destinations specified in Country Groups D:1, D:4, and D:5 of supplement no. 1 to part 740 of the EAR, excluding any destination also specified in Country Groups A:5 or A:6.
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: N/A

NAC/ACA: N/A

ACM: Yes for ''technology'' for commodities controlled by 5A992.z or ''software'' controlled by 5D992.z.

Note: *See § 740.2(a)(9)(ii) of the EAR for license exception restrictions for technology for .z paragraphs under ''technology'' for commodities controlled by 5A992.z or ''software'' controlled by 5D992.z.*

List of Items Controlled

Related Controls: N/A
Related Definitions: N/A
Items:

a. [Reserved]

b. ''Technology'', n.e.s., for the ''use'' of mass market commodities controlled by 5A992 or mass market ''software'' controlled by 5D992.

* * * * *

Jeffrey I. Kessler,

Under Secretary for Industry and Security.

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