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## Part IV

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Wassenaar Arrangement 2010 Plenary Agreements Implementation: Commerce Control List, Definitions, Reports; Final Rule

**DEPARTMENT OF COMMERCE**

**Bureau of Industry and Security**

**15 CFR Parts 734, 740, 742, 743, 772, 774**

**[Docket No. 110124056–1119–01]**

**RIN 0694–AF11**

## Wassenaar Arrangement 2010 Plenary Agreements Implementation: Commerce Control List, Definitions, Reports

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

**ACTION:** Final rule.

**SUMMARY:** The Bureau of Industry and Security (BIS) maintains, as part of the agency's Export Administration Regulations (EAR), the Commerce Control List (CCL), which identifies items subject to Department of Commerce export controls. This final rule revises the CCL to implement changes made to the Wassenaar Arrangement's List of Dual-Use Goods and Technologies (Wassenaar List) maintained and agreed to by governments participating in the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (Wassenaar Arrangement, or WA) at the December 2010 WA Plenary Meeting (the Plenary). The Wassenaar Arrangement advocates implementation of effective export controls on strategic items with the objective of improving regional and international security and stability. To harmonize the CCL with the changes made to the Wassenaar List at the Plenary, this rule amends entries on the CCL that are controlled for national security reasons in Categories 1, 2, 3, 4, 5 Parts I & II, 6, 7, 8, and 9, revises reporting requirements, and adds and amends definitions in the EAR.

**DATES:** *Effective Date:* This rule is effective: May 20, 2011.

**FOR FURTHER INFORMATION CONTACT:** For general questions contact Sharron Cook, Office of Exporter Services, Bureau of Industry and Security, U.S. Department of Commerce at 202–482–2440 or by *e-mail: Sharron.cook@bis.doc.gov.*

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**SUPPLEMENTARY INFORMATION:**

### Background

In July 1996, the United States and thirty-three other countries gave final approval to the establishment of a new multilateral export control arrangement called the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (Wassenaar Arrangement or WA). The Wassenaar Arrangement contributes to regional and international security and stability by promoting transparency and greater responsibility in transfers of conventional arms and dual use goods and technologies, thus preventing destabilizing accumulations of such items. Participating states committed to exchange information on exports of dual use goods and technologies to non-participating states for the purposes of enhancing transparency and assisting in developing a common understanding of the risks associated with the transfers of these items. For more information on the Wassenaar Arrangement go to *http://www.wassenaar.org/.*

### Revisions to the Commerce Control List

This rule revises the following 53 ECCNs on the Commerce Control List (CCL) to implement the changes to the Wassenaar List of Dual-Use Goods and Technologies agreed to at the December 2010 WA Plenary meeting: 1A002, 1A004, 1B001, 1C003, 1C006, 1C008, 1C010, 1C011, 1C111, 2A001, 2B001, 2B005, 2B006, 3A001, 3A002, 3A991, 3B001, 3C001, 3E001, 4A001, 5A001, 5D001, 5E001, 5A002, 5D002, 5E002, 6A001, 6A002, 6A003, 6A005, 6A006, 6A008, 6D001, 6D003, 6E001, 6E002, 6E003, 7A001, 7A002, 7A003, 7E004, 8A001, 8A002, 9A001, 9A003, 9A991, 9B001, 9B002, 9B008, 9D003, 9D004, 9E001 and 9E003. These changes are described in more detail below.

### Category 1—Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"

ECCN 1A002 is amended by:

Removing the phrase "finished or" from Notes 2 and 3, because finished products are not generally specified based on the materials they contain.

Adding a new Note 4 to convey that ECCN "1A002 does not apply to finished items specially designed for a specific application."

ECCN 1A004 is amended by:

Deleting the phrase "Nuclear, biological and chemical (NBC)" from 1A004.c, because it conflicts with the list in 1A004.c, as it is missing radioactive materials, and is redundant to the list.

Changing the format of the civil industries from a narrative list to an enumerated list formatin paragraph (b) of the Note to 1A004 that is located after the Notes to paragraph 1A004.d, as well as replacing the "and" to "or" between the phrases "residential safety" and "civil industries" in this same paragraph (b) of this same Note. These changes are made to clarify the meaning of the note.

ECCN 1B001 is amended by:

Adding the phrase "specially designed or modified," removing the words "to manufacture," and adding the word "for" to paragraph 1B001.c to clarify that common textile weaving and interlacing machines are not intended to be controlled. In addition, the note is removed because the new text makes the note unnecessary.

ECCN 1C003 is amended by replacing, for the sake of clarity, the phrase "initial permeability" with "initial relative permeability" in the technical note of paragraph 1C003.a.

ECCN 1C006 is amended by:

Revising the format of the parameters in 1C006.c from a narrative to a cascaded list format to clarify the text.

Removing 1C006.e to correct the text. This paragraph was the last paragraph of a technical note that was moved in 2009 from 1C006.d to the end of 1C006.a.2.e. This paragraph was inadvertently not removed when the technical note was moved.

ECCN 1C008 is amended by:

Removing "Non-fluorinated polymeric substances" and adding in its place "Imides" in 1C008.a, and adding the word "compounds" to 1C008.b.1, to better describe the scope of the paragraphs that follow.

Adding "(PAI) having a 'glass transition temperature ($T_g$)' exceeding 563 K (290° C)" to 1C008.a.2—Aromatic polyamide-imides, which adds a temperature property as a parameter.

Adding the word "compounds" to 1C008.b.1 to add a more complete description of the scope of the paragraphs that follow.

Removing the CAS numbers for all the compounds in 1C008.b.1.a, because CAS numbers are used to describe specific substances, not compounds.

Adding the word "acids" to 1C008.b.2 to better describe the scope of the paragraphs that follow.

Adding a new sentence about the PAI test to the technical note at the end of the items paragraph of 1C008.PAI varnishes are sometimes sold and these contain PAI polymers that are only partially polymerized. The added language therefore explains that the $T_g$ parameter should be determined using a PAI specimen that is properly cured to reach a maximum capability.

ECCN 1C010 is amended by:

Revising the narrative format to a cascaded format in Note 2 to 1C010.e, in order to add a new paragraph (b) to this note to convey that "Fully or partially resin-impregnated or pitch-impregnated mechanically chopped, milled or cut carbon "fibrous or filamentary materials" 25.0 mm or less in length when using a resin or pitch other than those specified by 1C008 or 1C009.b." are not controlled under 1C010.e.

Amending the technical note at the end of ECCN 1C010 by splitting it into two separate sentences (ending the first sentence after "specimen"), for better readability and clarity. Also, this rule removes the phrase "with a minimum 90% degree of cure" and adding in its place "In the case of thermoset materials, degree of cure of a dry test specimen shall be a minimum of 90%" to clarify the scope of "degree of cure" in the definition for 'Dynamic Mechanical Analysis glass transition temperature (DMA $T_g$)'.

ECCN 1C011 is amended by:

Revising the Missile Technology (MT) paragraph in the License Requirements section because WA has now aligned with the Missile Technology Control Regime in controls for boron and boron alloys; therefore, the parenthetical phrase "for boron" is removed and the MT control applies to both the boron and the boron alloy in 1C011.b.

Adding a new sentence to number 2 of the Related Controls paragraph to indicate that "the following are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls" and adding "metal powders mixed with other substances to form a mixture formulated for military purposes" to the end of the existing list that includes materials controlled by 1C011.a.

Replacing the word "carbide" with "alloys" in 1C011.b for boron, and cascading the parameters in two new paragraphs 1C011.b.1 and 1C001.b.2 in order to align with controls under the Missile Technology Control Regime, to make the text more clear, and to recognize the foreign availability and decreased use of boron carbide for military uses.

ECCN 1C111 is amended by adding a note 3 to the Related Controls paragraph to reference ECCN 1C011 for boron and boron alloys, and by removing paragraph 1C111.a.2.b "Boron alloys with a purity of 85% by weight or more" because this control is now in 1C011.b.

**Category 2—Materials Processing**

ECCN 2A001 is amended by:

Removing reference to 2A001.b from the License Exceptions GBS and CIV eligibility paragraphs in ECCN 2A001, because this paragraph is removed and reserved by this rule.

Removing one of the standards "or ANSI/ABMA Std 20 Tolerance Class ABEC–7 or RBEC–7" from paragraph 2A001.a and leaving only "or other national equivalents" because this language sufficiently describes the applicable standard for the control.

Removing and reserving paragraph 2A001.b, that controlled specified ball bearings and solid roller bearings because of the wide foreign availability of these commodities.

ECCN 2B001 is amended by removing the phrase "Having two or more rotary axes and all of the following" and adding in its place "At least two rotary axes having all of the following" to clarify the scope of the 2B001.e.2.

ECCN 2B005 is amended by removing the phrase "allowing for the" and adding in its place "capable of" to clarify the control in the introductory text of 2B005.g.

ECCN 2B006 is amended by:

Replacing the phrase "indication (MPEE)" with "length measurement ($E_{0,MPE}$)" to harmonize with the new ISO standard and replacing the year of the ISO standard from "2001" to "2009" in 2B006.a.

Replacing the acronym "MPEE" with "$E_{0,MPE}$" in the Technical Note following 2B006.a to harmonize with the new ISO standard.

Replacing the phrase "Machine tools, which" with "2B006 includes machine tools, other than those specified by 2B001, that" to clarify the Note following paragraph 2B006.c.

Removing two superfluous phrases "are controlled" and "the machine tool function or" from the Note following paragraph 2B006.c.

**Category 3—Electronics**

ECCN 3A001 is amended by:

Removing paragraph 3A001.a.4 from the License Exception CIV eligibility paragraph in the License Exceptions section, because 3A001.a.4 is removed by this rule.

Removing and reserving paragraph 3A001.a.4 "Storage integrated circuits manufactured from a compound semiconductor," because the circuits of concern are covered by 3A001.a.2.

Adding the word "Converter" to "Analog-to-Digital," adding capitalization, and adding the acronyms (ADC) and (DAC) to paragraph 3A001.a.5.

Replacing "Analog-to-digital converters" with "ADCs" in 3A001.a.5.a and Note 2 of the technical note located after 3A001.a.5.b for consistency.

Revising the output rate for Analog-to-Digital Converters (ADCs) in 3A001.a.5.a.2, a.5.a.3, a.5.a.4, and a.5.a.5 from "200 million words per second" to "300 million words per second," "105 million words per second" to "200 million words per second," "10 million words per second" to "125 million words per second," and "2.5 million words per second" to "20 million words per second," respectively. These revisions are made because the speeds and capabilities of digital signal processing have advanced significantly since the last revision to these control parameters.

The Technical Notes that appeared after paragraph 3A001.a.5.b are moved to after 3A001.a.5.a.5. In addition, this rule moves the last half of Technical Note 3 to Note 6 and moves Note 4 to Note 7, and adds new notes 4, 5, 8, and 9 to address aggregation of ADCs.

Revising the parameters for Digital-to-Analog Converters (DAC) in 3A001.a.5.b to better describe the crucial benchmarks for evaluating DAC devices, as well as adding four new technical notes that include two new technical terms: "adjusted update rate" and "Spurious Free Dynamic Range" (SFDR).

Revising the upper threshold of the frequency parameter from 6 GHz to 6.8 GHz for Microwave Monolithic Integrated Circuits (MMIC) power amplifiers in paragraphs 3A001.b.2.a and b.2.b, for discrete microwave transistors in paragraphs 3A001.b.3.a and b.3.b, for microwave solid state amplifiers and microwave assemblies/modules containing microwave solid state amplifiers in paragraphs 3A001.b.4.a and b.4.b, and for the technology for the development or production of MMIC power amplifiers in paragraphs 5E001.d.1 and d.2, because the prevalent bands for commercial satellite communications are 5.7 GHz to 6.7 GHz.

Adding a new parameter to paragraphs 3A001.b.2.d and b.2.f that reads "and with an average output power greater than 0.1 nW" for MMICs to narrow the scope of controls.

Removing and reserving Note 1 to 3A001.b.2 relating to broadcast satellite

equipment, because this entry controls components, not equipment.

Adding the words "product group" to Note 3 to 3A001.b.2 to clarify the text.

Adding a new parameter to paragraphs 3A001.b.3.e that reads "and with an average output power greater than 0.1 nW" for discrete microwave transistors to narrow the scope of this control.

Adding a new parameter to paragraphs 3A001.b.4.c and b.4.e that reads "and with an average output power greater than 0.1 nW" for microwave solid state amplifiers and microwave assemblies/modules containing microwave solid state amplifiers to narrow the scope of controls for these items.

Removing and reserving Note 1 after 3A001.b.4.f.3 concerning broadcast satellite equipment, because 3A001 does not control equipment but components, in this case Microwave or Millimeter Wave Components. In addition, *Note 1* is not necessary, because MMICs specially designed for satellite broadcast equipment are not controlled by Category 3 pursuant to *Note 1* at the beginning of Category 3.

Removing the phrase "from one selected frequency to another" from 3A001.b.11 because it is redundant with the term "frequency switching."

ECCN 3A002 is amended by:

Revising the parameters for radio-frequency signal analyzers in paragraphs 3A002.c to revise control thresholds to more accurately differentiate between commercial/civilian applications and applications of strategic concern by changing the controls from frequency only to a combination of frequency and other parameters. This change includes the redesignation of 3A002.c.3 to c.4 and the addition of a new paragraph 3A002.c.3.

Revising and rearranging the narrative in 3A002.c.1 to more clearly describe the radio-frequency signal analyzers.

This rule introduces a new parameter, "Displayed Average Noise Level," in 3A002.c.2. This control protects the applications (principally advanced radar) that are of national security concern. Specifically, this revision relaxes the controls in 3A002.c.2 by adding the additional control parameter, "Displayed Average Noise Level," that applies to the current frequency parameter of between 43.5 and 70 GHz.

Adding a new control in 3A002.c.3 for signal analyzers having a frequency exceeding 70 GHz.

Revising the "real-time bandwidth" for "dynamic signal analyzers" from "500 kHz" to "40 MHz" in the newly designated paragraph 3A002.c.4 to respond to emerging communications standards and available test equipment as "dynamic signal analyzers" approach 40 MHz in bandwidth.There is growing application of "dynamic signal analyzers" with "real-time bandwidth" above 40 MHz bandwidth in military applications.

Replacing the reference in the Note following 3A002.c.4 from "3A002.c.3" to "3A002.c.4" to harmonize it with the addition of paragraph 3A002.c.3.

Revising paragraphs 3A002.d.1, d.2 and the introductory text to d.4 relating to frequency synthesized signal generators to revise control thresholds to more accurately differentiate between purely civilian applications and those of strategic concern. These revisions are being implemented by changing the entry from one solely based on frequency to a combination of frequency and other parameters, such as output power.

Revising 3A002.d.3.e and adding d.3.f to clarify the frequency switching controls by defining switching times and windows within the range 43.5–70 GHz.

Revising the introductory text for 3A002.d.4 to add an upper limit to the frequency switching control of 70 GHz.

Removing an "or" at the end of paragraph 3A002.d.3.d and adding it to the end of paragraph 3A002.d.3.e, because of the addition of new paragraph d.3.f. An "or" is added at the end of paragraph 3A002.d.4.b, because of the addition of new paragraph 3A002.d.5. These controls protect the applications (principally advanced radar) that are of national security concern. Finally, the umbrella control on signal generators ''> 70 GHz" is moved to new paragraph 3A002.d.5. Specifically, this revision relaxes the frequency threshold from the current value of 43.5 GHz to 70 GHz by clarifying that other control parameters apply between 43.5 and 70 GHz. This approach addresses emerging civilian telecommunications standards in the 56–67 GHz band by defining performance parameters.

ECCN 3A991 is amended by replacing the control level for Analog-to-Digital Converters (ADCs) in paragraph 3A991.c with the former control levels for ADCs in ECCN 3A001.a.5.a. Therefore, ADCs in 3A991.c.1 having a resolution of 8 bit or more, but less than 12 bit are amended by revising the output rate from "greater than 100 million words per second" to "greater than 200 million words per second." ADCs in 3A991.c.2 having a resolution of 12 bit are amended by revising the output rate from "greater than 5 million words per second" to "greater than 105 million words per second." ADCs in 3A991.c.3 having a resolution of more than 12 bit but equal to or less than 14 bit are amended by revising the output rate from "greater than 500 thousand words per second" to "greater than 10 million words per second." ADCs in 3A991.c.4 having a resolution of more than 14 bit are amended by revising the output rate from "greater than 500 thousand words per second" to "greater than 2.5 million words per second." These changes are made because of the technological advances in the field of ADCs and because raising the control level for ADCs destined to anti-terrorism countries will not pose a national security threat to the United States.

Pursuant to the EAR, those ADCs that are now classified as EAR99 still require a license for export to Cuba, North Korea, and Syria, because a license is required for export of all items subject to the EAR to these countries. EAR99 ADCs destined to Iran and Sudan may require a license pursuant to the EAR if destined to a restricted end-user or end-use. (*See* General Prohibitions 4 through 10 in Part 736 of the EAR.) Also note that the Treasury Department's Office of Foreign Assets Control (OFAC) administers comprehensive trade embargoes against Iran and Sudan, and exports or reexports of EAR99 ADCs to those countries are subject to OFAC's regulations. See 31 CFR part 538—the Sudanese Sanctions Regulations and 31 CFR part 560—the Iranian Transactions Regulations.

ECCN 3B001 is amended by:

Revising the critical dimension of semiconductor devices by plasma enhanced Chemical Vapor Deposition (CVD) equipment from "180 nm or less" to "65 nm or less" in paragraph 3B001.d.1 and d.2 to account for technical advances in the industry of semiconductor manufacturing.

Capitalizing "Minimum Resolvable Feature" size and adding the acronym (MRF) in paragraph 3B001.f.1.b and in the technical note that follows.

Revising the feature size from "180 nm" to "95 nm" for align and expose step and repeat (direct step on wafer) or step and scan (scanner) equipment in 3A001.f.1.b and for imprint lithography equipment in paragraph 3B001.f.2.

Revising the K factor from "0.45" to "0.35" in the Technical Note following 3B001.f.1.b to align with advancing technology.

ECCN 3C001 is amended by removing the text in the Related Definitions paragraph of the List of Items Controlled section and adding in its place "N/A" to correct the Related Definitions paragraph.

ECCN 3E001 is amended by revising the parameter in paragraph (a) of Note 2 from "of 0.5 μm or more; and" to "at or above 0.130 μm," to accommodate advances in technology and increasing civil application of that technology.

Replacing the current text in paragraph (b) of Note 2 "Not incorporating multi-layer structures" with "Incorporating multi-layer structures with three or fewer metal layers" to expand the exclusion note.

In addition, this rule removes the technical note in Note 2 of 3E001 because the note is no longer necessary due to the revision to paragraph (b) of Note 2.

**Category 4—Computers**

ECCN 4A001 is amended by:

Adding the phrase "or "civil aircraft"" to the Note to 4A001.a.1, because some civil aircraft computers often reach the thresholds in 4A001.

Revising the single event upset rate in 4A002.a.2.c from "$1 \times 10^{-7}$" to "$1 \times 10^{-8}$" because of advances in this technology. A Note is added to 4A001.a.2 to clarify that this provision does not apply to computers specially designed for "civil aircraft" applications to prevent this control from inadvertently capturing onboard civil aircraft computers.

**Category 5 Part I—Telecommunications**

Category 5 Part 1 is amended by adding a second *Nota Bene* (N.B.2.) after Note 1 at the beginning of the category to close a potential loophole in relation to items incorporating or using cryptography or other "information security" functionality, including encryption, "cryptanalysis" and "cryptographic activation." Note 1 could be read to require that all telecommunications items should only be classified using Category 5 Part 1 even if they incorporate or use cryptography or other "information security" functionality, when, in fact, the control status of "information security" items is determined using Category 5 Part 2 . The second *Nota Bene* clarifies that any item that is designed for telecommunications and incorporates or uses cryptography should also be classified using Category 5 Part 2.

ECCN 5A001 is amended by:

Replacing the text in paragraph 5A001.c with the text in paragraph 5A001.c.1 "Optical fiber communication cables, optical fibers and accessories, as follows:". Also, adding an "and" between "length" and "specified" in the new 5A001.c (former 5A001.c.1). The *Nota Bene* (N.B. 1) that reads "For underwater umbilical cables, and connectors thereof, see 8A002.a.3." is moved from 5A001.c.2 to after 5A001.c, revised by removing the phrase ", and connectors thereof" and relabeled from "N.B. 1" to "N.B."

5A001.c.2, the exclusion Note and *Nota Bene* 2 that follows it are deleted, because they no longer serve a purpose.

Replacing "electronic" with "radio frequency (RF) transmitting" and replacing "Radio Controlled Improvised Explosive Devices (RCIED)" with "Improvised Explosive Devices (IEDs)" in paragraph 5A001.h to clarify the text. Also, adding a new reference to ECCN 5A001.f in the *Nota Bene* of 5A001.h to reference 5A001.f and Category XI of the ITAR where radio transmission equipment is controlled. In addition, 5A001.h is moved from NS Column 2 controls to NS Column 1 controls because Radio Frequency (RF) transmitting equipment designed or modified for prematurely activating or preventing the initiation of Improvised Explosive Devices (IEDs) are now listed on the Wassenaar Arrangement's Very Sensitive List. License Exceptions LVS, GBS, and CIV are no longer available, for 5A001.h items because they have been added to the Wassenaar Arrangement's Very Sensitive List.

ECCN 5D001 is amended by:

Revising the License Exceptions section by removing License Exception CIV eligibility for "software" controlled by 5D001.a and specially designed for the "development" or "production" of items controlled by 5A001.h; and removing License Exception TSR eligibility for exports and reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "software" controlled by 5D001.a and specially designed for the "development" or "production" of items controlled by 5A001.h. "Software" controlled by 5D001.a and specially designed for the "development" or "production" of items controlled by 5A001.h are on the Wassenaar Arrangement's Very Sensitive List.

ECCN 5E001 is amended by:

Removing License Exception TSR eligibility for exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "technology" controlled by 5E001.a for the "development" or "production" of items controlled by 5A001.h; or"software" controlled by 5D001.a that is specially designed for the "development" or "production" of equipment, functions or features controlled by 5A001.h.

Adding a new Note for 5E001.b.4 to exclude "technology" for the "development" of civil cellular radio-communications systems from control under 5E001, because this technology is commercial and does not warrant national security controls.

Raising the frequency parameter from 6.0 GHz to 6.8 GHz for technology for the "development" and "production" of Microwave Monolithic Integrated Circuit (MMIC) power amplifiers specially designed for telecommunications in 5E001.d.1 and d.2, because a primary segment of the high power amplifier market is for commercial satellite communications (TV and Internet traffic) and meteorological radar within the standard ITU bands. The prevalent bands for commercial satellite communications are 5.7GHz to 6.7 GHz and 13.75GHz to 14.5GHz.

**Category 5 Part II—"Information Security"**

ECCN 5A002 is amended by:

Revising the EI paragraph in the License Requirements section to add paragraph 5A002.b.

Revising Note 1 in the Related Controls paragraph of the List of Items Controlled section to add paragraph (j) to the first sentence, as paragraph (j) has been added to the decontrol Note of ECCN 5A002.

Replacing a period with a semicolon in paragraph (a)(2) of the Note at the beginning of the Items paragraph of the List of Items Controlled section to correct the punctuation.

Removing "or" from paragraph .g and removing the period at the end of paragraph .i and adding in its place "; or" in the Note at the beginning of the Items paragraph of the List of Items Controlled section.

Adding a new paragraph .j to the decontrol notes in ECCN 5A002 for equipment where the encryption cannot be used or can only be made useable by means of "cryptographic activation," as specified, as well as adding a new *Nota Bene* (N.B.) to reference 5A002.a for equipment that has undergone "cryptographic activation." This new note is added to clarify the treatment of equipment with dormant cryptography.

Adding a new control paragraph 5A002.b to control systems, equipment, application specific electronic assemblies, modules and integrated circuits, designed or modified to enable an item to achieve or exceed the controlled performance levels for functionality specified by 5A002.a that

would not otherwise be enabled. This addition is made to address the issue of mechanisms that are used to upgrade the cryptographic functionality of equipment to performance levels specified by 5A002.a, when the equipment would not be controlled under 5A002.a (*i.e.,* would not perform controlled cryptographic functions) without these upgrades.

These changes are intended to clarify existing policy regarding the treatment of products with dormant cryptography. They are not a new control on these products.

ECCN 5D002 is amended by:

Revising the EI control paragraph by removing the phrase "5D002.a or c.1" and adding in its place "5D002.a,.c.1, or .d" in the License Requirements section.

Adding a new paragraph 5D002.d to control "software" designed or modified to enable an item to achieve or exceed the controlled performance levels for functionality specified by 5A002.a that would not otherwise be enabled. This addition is made to address the issue of mechanisms that are used to upgrade the cryptographic functionality of equipment or "software" to performance levels specified by 5A002.a (note: 5D002 "software" is classified according to performance levels specified by 5A002), when the equipment or "software" would not be controlled under 5A002.a or 5D002 (*i.e.,* would not perform controlled cryptographic functions) without these upgrades.

ECCN 5E002 is amended by:

Moving the text of the Heading to 5E002.a and adding in its place "Technology" as follows:"

Revising the EI control paragraph in the License Requirement section by removing the phrase "ECCNs 5A002 or 5D002.a or 5D002.c" and adding in its place "ECCNs 5A002 or 5D002" to succinctly indicate what is EI controlled under ECCN 5E002.

Removing the text following the Items paragraph, which states "The list of items controlled is contained in the ECCN heading" and adding in its place a control paragraph 5E002.a to control "technology" according to the General Technology Note for the "development," "production" or "use" of equipment specified by 5A002 or 5B002 or "software" specified by 5D002.a or 5D002.c. Prior to the addition of a new "technology" control paragraph to address the issue of "cryptographic activation," ECCN 5E002 did not have any specified control paragraphs. The 5E002 Heading text in place prior to this rule is now the text of the new paragraph 5E002.a.

Adding a control paragraph 5E002.b to control "technology" to enable an item to achieve or exceed the controlled performance levels for functionality specified by 5A002.a that would not otherwise be enabled. This addition is made to address the issue of mechanisms that are used to upgrade the cryptographic functionality of equipment or "software" to performance levels specified by 5A002.a, when the equipment or "software" would not be controlled under 5A002.a or 5D002 (*i.e.,* would not perform controlled cryptographic functions) without these upgrades.

**Category 6—Sensors and Lasers**

ECCN 6A001 is amended by:

Removing 6A001.c from License Exceptions LVS, GBS and CIV eligibility in the License Exceptions section, because this paragraph is moved to ECCN 8A002.r.

Adding a new control for acoustic seabed survey equipment in 6A001.a.1.a because of the usefulness of this equipment in military reconnaissance, including subparagraphs 6A001.a.1.a.1 (surface vessel survey equipment), a.1.a.2 (underwater survey equipment designed for seabed topographic mapping), and a.1.a.3 (Side Scan Sonar (SSS) or Synthetic Aperture Sonar (SAS), designed for seabed imaging).

Removing the parenthetical phrase in 6A001.a.2 that read "receiving, whether or not related in normal application to separate active equipment" because it is guidance about the control that belongs in a Note. A new Note is added to 6A001.a.2 to provide this guidance about the control.

Moving ECCN 6A001.c (diver deterrent acoustic systems) to ECCN 8A002.r, because the specified diver deterrent systems have no capability to detect divers and are only used to deter divers. This rule designates 6A001.c as reserved.

New *Nota Bene* (N.B.) is added to reference 8A002.r for controls on diver deterrent acoustic systems.

ECCN 6A002 is amended by adding a Note to 6A002.d.3 to exclude encapsulated optical sensing fibers specially designed for bore hole sensing applications, because these fibers have limited use outside of the intended application.

ECCN 6A003 is amended by correcting the abbreviation for Instantaneous Field of View (IFOV) in two places where it is listed as FOV in the technical note following paragraph (b)(4)(b) of Note 3 to 6A003.b.4.b.

ECCN 6A005 is revised by:

Adding a new Note to 6A005.c.1 to exclude dye lasers or other liquid lasers with specified parameters to correct the roll-back on controls resulting from the WA 2005 agreements.

Replacing a period with a semicolon in 6A005.f.4, because a new paragraph follows.

Adding a new paragraph 6A005.g to control laser acoustic detection equipment, and includes a technical note that reads "laser acoustic detection equipment is sometimes referred to as a laser microphone or particle flow detection microphone." This equipment can be used as a surreptitious listening device over very long distances.

ECCN 6A006 is amended by:

Adding 6A006.e to the list of items excluded from License Exception LVS eligibility, because it has been added to the Wassenaar Arrangement's Sensitive List.

Removing "and" from 6A006.c.3 and replacing a period with a semicolon in 6A006.d, because this rule adds a new paragraph.

Adding a new paragraph 6A006.e to control specified Underwater ElectroMagnetic Receivers (UEMR). The UEMR can be used in civil applications, such as oil and gas exploration, as well as for military purposes such as mine/vessel detection and alerting.

ECCN 6A008 is amended by:

Removing 6A008.l.3 from the License Exception LVS eligibility paragraph, because this rule removes and reserves this paragraph.

Adding an "or" to the end of 6A008.l.1 to harmonize it with changes in this ECCN;

Removing and reserving 6A008.l.2 and l.3, because these parameters for radar data processing sub-systems are no longer key or major criteria to determining whether these commodities are usable for military applications;

Revising 6A008.l.4 by adding the phrase "Configured to provide" at the beginning, replacing the phrase "in real time" with "within six seconds," and adding the phrase "specified by 6A008.f, or 6A008.i." to clarify the control parameter; and

Adding a *Nota Bene* to reference a related control in the U.S. Munitions List (22 CFR part 121).

ECCN 6D001 is amended by adding 6A004.c and d, and 6A008.d, h, and k to paragraph 3 of the License Exception TSR paragraph, because these ECCN subparagraphs are listed on the Wassenaar Arrangement's Sensitive List.

ECCN 6D003 is amended by:

Adding two new paragraphs 6D003.f.3 and f.4 to control "software" and "source code," specially designed for "real time processing" of electromagnetic data using underwater electromagnetic receivers specified by 6A006.e, because this source code and software is

essential for the use of Underwater ElectroMagnetic Receivers (UEMR).

Adding the phrase "designed to be" between "programs" and "hosted" in paragraph 6D003.h.1 to clarify that software to be exported is controlled not only when it has been loaded onto a general purpose computer, but also prior to loading onto such a computer.

ECCN 6E001 is amended by:

Revising the Heading by removing the reference to 6A018 (because ECCN 6A018 was removed from the CCL on July 30, 2004 (69 FR 46086)) and adding a missing closing parenthetical to the end of the Heading; and

Revising paragraph 4 of License Exception TSR by replacing 6A001.a.1.b.1 with 6A001.a.1.b, and adding 6A001.a.1.e, a.2.d; 6A002.a.1.a, a.1.b, a.2.a, a.2.b, a.3, b, and c; 6A003.b.3, b.4; 6A004.c and d; 6A005.a.1; 6A006.a.2, c.1, d, e, g, and h; 6A008.d, h, and k. These revisions are made to conform to the Wassenaar Arrangement's Sensitive List.

ECCN 6E002 is amended by:

Revising the Heading by removing the reference to 6A018 (because ECCN 6A018 was removed from the CCL on July 30, 2004 (69 FR 46086)).

Revising paragraph 3 of License Exception TSR by replacing the word "development" with "production" to correct this paragraph, replace 6A001.a.1.b.1 with 6A001.a.1.b, moving 6A001.a.2.c to paragraph (b) of this paragraph, adding 6A002.a.3, 6A002.b, 6A002.c, 6A003.b.3, 6A003.b.4, 6A004.c, 6A004.d, 6A005.a.1, 6A006.a.2, 6A006.c.1, 6A006.d, 6A006.e, 6A006.g, 6A006.h, 6A008.d, 6A008.h, 6A008.k, 6A008.l.3, 6B008, replacing 6A001.a.2.e with 6A001.a.2.c in paragraph (b) of this paragraph, and removing paragraph (c) of this paragraph 3. These revisions are made to conform to the Wassenaar Arrangement's Sensitive List.

ECCN 6E003 is amended by adding the phrase "an 'optical thickness'" between "achieve" and "uniformity" in paragraph 6E003.d.1 to add clarity to the parameter, as well as adding a technical note to this paragraph to define 'optical thickness.'

**Category 7—Navigation and Avionics**

ECCN 7A001 is amended by:

Adding the phrase "but less than or equal to 100 g" after "15g" in 7A001.a.2 for linear accelerometers, to prevent an overlap of control between 7A001 and 7A002.

Adding a note for 7A001.a.1 and a.2 to exclude accelerometers limited to measuring only vibration or shock.

ECCN 7A002 is amended by:

Adding new parameters to control gyros or angular rate sensors in 7A002.a and .b to address an overlap of controls between 7A001 and 7A002.

Adding a new Note for 7A002.a.2.b to exclude 'spinning mass gyros' from 7A002 controls.

ECCN 7A003 is amended by removing the phrase "and specially designed components therefor" from 7A003.d, because this phrase is redundant. The specially designed components of concern are the accelerometers and gyros that are already controlled in the text of 7A003.d.

ECCN 7E004 is amended by:

Removing the phrase "Raster-type head-up displays or" from 7E004.a.3, because cathode ray tube and related raster scanning technology is outdated and no longer represents the standard for display technology.

Removing and reserving specified inertial navigation systems or gyro-astro compasses in 7E004.a.4, because this technology is covered by ECCNs 7E001 and 7E002.

**Category 8—Marine**

ECCN 8A001 is amended by:

Removing the word "Fiber" from paragraph 8A001.d.3 and replacing "optic" with "optical," because this paragraph addresses parameters for untethered submersible vehicles, which, by definition, are not tethered by fiber.

ECCN 8A002 is amended by:

Adding paragraph 8A002.r to License Exceptions GBS and CIV, because this paragraph was moved from 6A001.c, which was eligible for these license exceptions.

Cascading the parameters in paragraph 8A002.i.l to make clear that remotely controlled articulated manipulators specially designed for use with submersibles vehicles are controlled when the system that controls the manipulators uses either measured or detected information from tactile sensors.

Adding single quotes around the term 'active noise reduction or cancellation systems' in paragraph 8A002.o.3.b and moving some of the text of 8A002.o.3.b into a new technical note that defines 'active noise reduction or cancellation systems' to move definitional text out of the parameter paragraph.

Cascading the text in 8A002.p to make it clear that both the "power output" and "using divergent nozzle and flow conditioning vane techniques" parameters apply to pumpjet propulsion systems.

Cascading the parameters in 8A002.q to make it clear that closed circuit rebreathers and semi-closed circuit rebreathers are types of underwater swimming and diving equipment that are controlled by this paragraph.

Replacing the word "apparatus" with "rebreathers," in 8A002.q.1 and q.2, and replacing the phrase "its user" with "their users" to clarify the Note to 8A002.q.

Adding a new paragraph 8A002.r, which has been moved from 6A001.c, because the specified diver deterrent systems have no capability to detect divers and are only used to deter divers. This rule also adds related notes describing the scope of 8A002.r to help readers understand the scope of the control better.

**Category 9—Aerospace and Propulsion**

ECCN 9A001 is amended by adding a reference to 9E003.i in 9A001.a as a new parameter for control of aero gas turbine engines.

ECCN 9A003 is amended by replacing the phrase "having any of the following" with "any of the following" in the Header because the Items paragraphs do not list characteristics of engine propulsion systems. In addition, this rule adds 9E003.i ("technology" for adjustable flow path systems designed to maintain engine stability for gas generator turbines, fan or power turbines, or propelling nozzles) to the heading of 9A003.

ECCN 9A991 is amended by adding double quotes around the term "civil aircraft" in paragraph 9A991.b in the Items paragraph of the List of Items Controlled, because this is a defined term in Part 772.

ECCN 9B001 is amended by adding double quotes around the term "tip shroud", because this rule adds a definition to Part 772 of the EAR.

ECCN 9B002 is amended by moving and cascading the text that appeared in the Heading to the Items paragraph of the List of Items Controlled section to improve clarity of the control. In addition, this rule replaces the reference to "9E003.a. or 9E003.h" with "9E003.h and 9E003.i" in the new paragraph 9B002.b, to harmonize it with the movement of "technology" for adjustable flow path systems designed to maintain engine stability for gas generator turbines, fan or power turbines, or propelling nozzles from 9E003.a.10 to 9E003.i.

ECCN 9B008 is amended by revising the Heading for clarity of the control scope of the entry.

ECCN 9D003 is amended by:

Replacing the phrase "specially designed or modified for the "use" of "Full Authority Digital Electronic Engine Controls Systems"" with "incorporating "technology" specified by

9E003.h and used in" to use less words to refer to the same parameters.

Removing the phrase "as follows (see List of Items Controlled)" to harmonize with the revisions described in this entry.

Removing paragraphs 9D003.a and .b, and adding in their place the sentence, "The list of items controlled is contained in the ECCN heading."

ECCN 9D004 is amended by adding double quotes around the newly defined term "tip shrouds" in paragraph 9D004.f.

ECCN 9E001 is corrected by adding back the MT and AT paragraphs of the License Requirement section that was inadvertently removed on January 2, 2008 (73 FR 32, 38).

ECCN 9E003 is amended by:

Revising the SI control paragraph in the License Requirements section to add paragraph .j, which was previously listed as .i but is redesignated as .j by this rule to the existing list. The SI control paragraph now includes a.8, .h, .i, and .j.

Adding double quotes around the newly defined term "tip shrouds" in paragraph 9E003.a.1, a.4, and a.5.

Replacing the word "rotating" with "rotor" in 9E003.a.8, because this is a more precise description of the component to be controlled.

Adding a Technical Note to define "damage tolerant" after 9E003.a.8 to add clarity to the control and adding single quotes around 'damage tolerant' to identify that this term is defined in 9E003. Adding "or" to the end of the text for a.8, because a.8 is the last paragraph of substance before a.11, which is the last paragraph of 9E003.a.

Removing and reserving paragraph .a.10 and the related notes and adding a new *Note Bene* stating "For adjustable flow path geometry, see 9E003.i." Redesignating paragraph .i as paragraph .j in the Items paragraph of the List of Items Controlled section, in order to move technology for "adjustable flow path geometry and associated control systems" from 9E003.a.10 to the new 9E003.i. This paragraph was moved to move it out from under the stipulation in 9E003.a that this particular technology must be "required" for the "development" or "production" of any of the following gas turbine engine components or systems. Instead the new more precise control is for specifically listed "technology" for adjustable flow path systems designed to maintain engine stability for gas generator turbines, fan or power turbines, or propelling nozzles.

**§ 734.4 *De minimis* U.S. Content**

Section 734.4 is amended by removing the phrase "9E003.a.1 through a.8, a.10, h and i." and adding in its place "9E003.a.1 through a.8, .h,.i and .j." in paragraph (a)(4) "Items for which there is no *de minimis* level." This change is made to harmonize with revisions to paragraphs ECCN 9E003.i and .jin this rule.

Section 734.4 is amended by removing the phrase "5A002.a.1, .a.2, .a.5, or .a.6, .a.9, or 5D002," and adding in its place "5A002.a.1, .a.2, .a.5, .a.6, .a.9, .b, or 5D002," in the introductory text of paragraph (b)(1), because 5A002.b is a newly added EI controlled paragraph.

**License Exception GOV 740.11—Supplement No. 1 to section 740.11**

As a matter of policy BIS does not allow the use of License Exception GOV for the export of items listed on the WA Very Sensitive List. As a result of WA agreements adding ECCN 5A001.h (and corresponding technology and software) to its Very Sensitive List, this rule makes corresponding changes to Supplement No. 1 to section 740.11.

**§ 740.17 License Exception ENC**

Section 740.17 is amended by removing the phrase "5A002.a.1, .a.2, .a.5, .a.6, or .a.9" and adding in its place "5A002.a.1, .a.2, .a.5, .a.6, .a.9, or .b" in the introductory paragraph and paragraphs (a)(1)(i), (a)(2), and (b)(1). This is a consequential change because of the newly added paragraph 5A002.b, which is EI controlled. (The newly added paragraph 5D002.d, which is EI controlled, is already covered by the existing reference to ECCN 5D002 in these section 740.17 paragraphs. So, while 5D002.d is a new CCL entry, its addition does not require any conforming edits in these particular paragraphs.)

**§ 742.14 Significant Items: Hot Section Technology for the Development, Production or Overhaul of Commercial Aircraft Engines, Components, and Systems**

This rule harmonizes the list of paragraphs under ECCN 9E003 that are controlled for SI reasons with the list in section 742.14. The paragraphs of ECCN 9E003 that are controlled for SI reasons are 9E003.a.1 through a.8, .h, .i, and .j.

**§ 742.15 Encryption Items**

Section 742.15 is amended by removing the phrase "5A002.a.1, a.2, a.5, a.6 and a.9; 5D002.a or c.1 for equipment controlled for EI reasons in ECCN 5A002;" and adding in its place "5A002.a.1, .a.2, .a.5, .a.6, .a.9, and .b; 5D002.a, .c.1 or .d for equipment and "software" controlled for EI reasons in ECCNs 5A002 or 5D002;" in paragraph (a)(1). This is a consequential change because of the newly added paragraphs 5A002.b and 5D002.d, which are EI controlled. This change also clarifies that "EI" controls apply to "software" items as specified by the designated ECCN 5D002 paragraphs, regardless of whether the "software" is bundled, commingled or otherwise used with ECCN 5A002 equipment.

**§ 743.1 Wassenaar Arrangement**

WA has three levels of control of goods: Basic List (BL), Sensitive List (SL), and Very Sensitive List (VSL). As a matter of policy, BIS makes certain items on the WA BL and SL eligible for license exceptions. Because of the U.S. obligations under its agreements to the WA, the U.S. must report on SL items exported outside of the WA membership countries. BIS does this by gathering data from its licensing database. To collect data on exports made under license exceptions, BIS requires WA reporting on SL items exported (excluding deemed exports) under License Exceptions GBS, CIV, TSR, LVS, APP and portions of GOV. As a result of WA making changes to its SL, this rule makes corresponding changes to the reporting requirements of section 743.1 of the EAR.

This rule revises the Note to paragraph (c)(1)(ii) of Section 743.1 by adding WA reporting requirements for 2D001 software other than that controlled by 2D002, specially designed for the development or production of deep-hole-drilling machines controlled by 2B001.f, or "numerically controlled" or manual machine tools controlled by 2B003. In addition, this rule revises the Note to paragraph (c)(1)(ii) of Section 743.1 by adding WA reporting requirements for 2E001 and 2E002 technology consistent with the General Technology Note for development and production of deep-hole-drilling machines controlled by 2B001.f, or "numerically controlled" or manual machine tools controlled by 2B003. This rule also changes the formatting of the information in this Note by putting it in outline format for easier readability.

This rule also revises reporting requirements in Section 743.1(c)(1)(v) to add 5A001.h in three places and to add 5A001.b.5 in two places for consistency.

This rule also revises reporting requirements in Section 743.1(c)(1)(vi) to remove 6A002.a.1.a, a.1.b, a.2.a, a.3, c, and e; 6A003.b.3 and b.4, ; and 6A006.a.1, a.2, and d, because the subparagraphs of these ECCNs are not eligible for list based license exceptions and are therefore not subject to WA reporting requirements under the EAR. In addition, this rule removes 6D001,

6D003.a, 6E001 and 6E002, because the only list based license exception this software and technology are eligible for is License Exception TSR, and only within countries that are WA member countries.

This rule also revises reporting requirements in Section 743.1(c)(1)(viii) to add the phrase "as well as 8A001.b, c, and d" to ECCNs 8D001 and 8E001, to indicate that the reporting requirements of 743.1(c)(1) apply to exports of 8D001 software for the development, production or use of commodities controlled by 8A001.b, c, and d and 8E001 technology for the development or production of commodities controlled by 8A001.b, c, and d.

**§ 772.1 Definitions of Terms as Used in the Export Administration Regulations (EAR)**

As a result of the decisions reached at the 2010 WA Plenary, this rule amends section 772.1 to add categories 4 and 9 as references in the definition of "civil aircraft" to identify other categories that use this definition. This rule also adds definitions for "cryptographic activation," "radiant sensitivity," and "tip shroud," and amends the existing definition for "information security" to include "cryptographic activation." This rule also amends the definition of "frequency switching time" to add a more practical and meaningful definition for the term. The change from an absolute frequency to a percentage of the final maximum specified frequency will make actual frequency measurements possible and reasonable, thus removing ambiguity of interpretation. Additionally, this rule corrects the structure of the definition of "frequency switching time" by replacing an absolute value with a relative value. Also, the phrase "or signal generator" is removed from the definition of "frequency synthesizer," because a signal generator is a subset of a frequency source. Finally, the definition of "object code" is amended by replacing the term "converted" with "compiled" to use a more precise and commonly used word to describe what it is that is done to source code in order to obtain object code.

**Supplement No. 3 to Part 774**

This rule adds a Statement of Understanding related to Used Goods at the end of Supplement No. 3 to Part 774, which states, "The specifications in the Commerce Control List apply equally to new or used goods. In the case of used goods, an evaluation by the Bureau of Industry and Security may be carried out in order to assess whether the goods are capable of meeting the relevant specifications." This statement was added because the regulated public often asks the question as to whether the controls apply to used or older equipment. The statement clearly states that the controls apply to new and used equipment equally, but that if you believe the equipment cannot perform to the stated control parameters because of its current age and condition that you may submit a classification request to BIS and BIS will evaluate the current state of the equipment against the control parameters and make a classification determination.

**Export Administration Act**

Since August 21, 2001, the Export Administration Act of 1979, as amended, has been in lapse. However, the President, through Executive Order 13222 of August 17, 2001 (3 CFR, 2001 Comp. 783 (2002)), which has been extended by successive Presidential Notices, the most recent being that of August 12, 2010, 75 FR 50681 (August 16, 2010) has continued the EAR in effect under the International Emergency Economic Powers Act (50 U.S.C. 1701 *et seq.*).

**Saving Clause**

Shipments of items removed from license exception eligibility or eligibility for export without a license as a result of this regulatory action that were on dock for loading, on lighter, laden aboard an exporting carrier, or en route aboard a carrier to a port of export, on May 20, 2011, pursuant to actual orders for export to a foreign destination, may proceed to that destination under the previous license exception eligibility or without a license so long as they have been exported from the United States before July 19, 2011. Any such items not actually exported before midnight, on July 19, 2011, require a license in accordance with this regulation.

**Rulemaking Requirements**

1. Executive Orders 13563 and 12866 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasizes the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. This rule has been designated a "significant regulatory action" although not economically significant, under section 3(f) of Executive Order 12866. Accordingly, the rule has been reviewed by the Office of Management and Budget.

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 two collections of information subject to the PRA. One of the collections has been approved by OMB under control number 0694–0088, "Multi Purpose Application," and carries a burden hour estimate of 58 minutes for a manual or electronic submission. The other of the collections has been approved by OMB under control number 0694–0106, "Reporting and Recordkeeping Requirements under the Wassenaar Arrangement," and carries a burden hour estimate of 21 minutes for a manual or electronic submission. Send comments regarding these burden estimates or any other aspect of these collections of information, including suggestions for reducing the burden, to OMB Desk Officer, New Executive Office Building, Washington, DC 20503; and to JasmeetSeehra, OMB Desk Officer, by e-mail at *Jasmeet_K._Seehra@omb.eop.gov* or by fax to (202) 395–7285; and to the Office of Administration, Bureau of Industry and Security, Department of Commerce, 14th and Pennsylvania Avenue, NW., Room 6622, Washington, DC 20230.

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

4. The provisions of the Administrative Procedure Act (5 U.S.C. 553) requiring notice of proposed rulemaking, the opportunity for public participation, and a delay in effective date, are inapplicable because this regulation involves a military and foreign affairs function of the United States (5 U.S.C. 553(a)(1)). Immediate implementation of these amendments fulfills the United States' international obligation to the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies. The Wassenaar Arrangement contributes to international security and regional stability by promoting greater responsibility in transfers of conventional arms and dual use goods and technologies, thus preventing

destabilizing accumulations of such items. The Wassenaar Arrangement consists of 40 member countries that act on a consensus basis and the changes set forth in this rule implement agreements reached at the December 2010 plenary session of the WA. Since the United States is a significant exporter of the items in this rule, implementation of this provision is necessary for the WA to achieve its purpose. Any delay in implementation will create a disruption in the movement of affected items globally because of disharmony between export control measures implemented by WA members, resulting in tension between member countries. Export controls work best when all countries implement the same export controls in a timely manner. If this rulemaking was delayed to allow for notice and comment, it would prevent the United States from fulfilling its commitment to the WA in a timely manner and would injure the credibility of the United States in this and other multilateral regimes.

Further, no other law requires that a notice of proposed rulemaking and an opportunity for public comment be given for this final rule. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule under the Administrative Procedure Act or by any other law, the analytical requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) are not applicable. Therefore, this regulation is issued in final form. Although there is no formal comment period, public comments on this regulation are welcome on a continuing basis. Comments should be submitted to Sharron Cook, Office of Exporter Services, Bureau of Industry and Security, Department of Commerce, 14th and Pennsylvania Ave., NW., Room 2099, Washington, DC 20230.

**List of Subjects**

*15 CFR Part 734*

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

*15 CFR Part 740*

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

*15 CFR Part 742*

Exports, Terrorism.

*15 CFR Part 743*

Administrative practice and procedure, Reporting and recordkeeping requirements.

*15 CFR Part 772*

Exports.

*15 CFR Part 774*

Exports, Reporting and recordkeeping requirements.

Accordingly, parts 734, 740, 742, 743, 772 and 774 of the Export Administration Regulations (15 CFR parts 730–774) are amended as follows:

## PART 734—[AMENDED]

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

**Authority:** 50 U.S.C. app. 2401 *et seq.;* 50 U.S.C. 1701 *et seq.;* E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13020, 61 FR 54079, 3 CFR, 1996 Comp., p. 219; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2010, 75 FR 50681 (August 16, 2010); Notice of November 4, 2010, 75 FR 68673 (November 8, 2010).

### § 734.4 [Amended]

■ 2. Section 734.4 is amended by:
■ a. Removing the phrase "9E003.a.1 through a.8, a.10, h and i."and adding in its place "9E003.a.1 through a.8,.h, .i., and .j." in paragraph (a)(4); and
■ b. Removing the phrase "5A002.a.1, .a.2, .a.5, or .a.6, .a.9, or 5D002," and adding in its place "5A002.a.1, .a.2, .a.5, .a.6, .a.9, .b, or 5D002," in the introductory text of paragraph (b)(1).

## PART 740—[AMENDED]

■ 3. The authority citation for Part 740 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.;* 50 U.S.C. 1701 *et seq.;* 22 U.S.C. 7201 *et seq.;* E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2010, 75 FR 50681 (August 16, 2010).

■ 4. Supplement No. 1 to section 740.11 is amended by:
■ a. Revising the introductory text to paragraph (a)(1);
■ b. Revising paragraphs (a)(1)(vi)(B) and (a)(1)(vii)(C);
■ c. Revising the introductory text to paragraph (b)(1); and
■ d. Revising paragraphs (b)(1)(vi)(B) and (b)(1)(vii)(C), to read as follows:

### § 740.11 Governments, international organizations, international inspections under the Chemical Weapons Convention, and International Space Station (GOV).

* * * * *

**SUPPLEMENT NO. 1 TO § 740.11—ADDITIONAL RESTRICTIONS ON USE OF LICENSE EXCEPTION GOV.**

(a) * * *

(1) Items identified on the Commerce Control List as controlled for national security (NS) reasons under Export Control Classification Numbers (ECCNs) as follows for export or reexport to destinations other than Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom: 1C001, 5A001.b.5, 5A001.h, 6A001.a.1.b.1 object detection and location systems, having a sound pressure level exceeding 210 dB (reference 1 μPa at 1 m) and an operating frequency in the band from 30 Hz to 2 kHz inclusive, 6A001.a.2.a.1, 6A001.a.2.a.2, 6A001.a.2.a.3, 6A001.a.2.a.5, 6A001.a.2.a.6, 6A001.a.2.b, 6A001.a.2.e, 6A002.a.1.c, 6A008.l.3, 6B008, 8A001.b, 8A001.d, 8A002.o.3.b; and

* * * * *

(vi) * * *

(B) Controlled by 5D001.a, specially designed for the "development" or "production" of equipment, functions or features controlled by 5A001.b.5 and 5A001.h; and

* * * * *

(vii) * * *

(C) Controlled by 5E001.a for the "development" or "production" of digitally controlled radio receivers controlled by 5A001.b.5 and radio frequency (RF) transmitting equipment controlled by 5A001.h; or 5D001.a for "software" specially designed for the "development" or "production" of digitally controlled radio receivers controlled by 5A001.b.5 and radio frequency (RF) transmitting equipment controlled by 5A001.h; and

* * * * *

(b) * * *

(1) Items identified on the Commerce Control List as controlled for national security (NS) reasons under Export Control Classification Numbers (ECCNs) as follows for export or reexport to destinations other than Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom: 1C001, 5A001.b.5, 5A001.h, 6A001.a.1.b.1 object detection and location systems having a sound pressure level exceeding 210 dB (reference 1 μPa at 1 m) for equipment with an operating frequency in the band from 30 Hz to 2 kHz inclusive, 6A001.a.2.a.1, 6A001.a.2.a.2, 6A001.a.2.a.3, 6A001.a.2.a.5, 6A001.a.2.a.6, 6A001.a.2.b, 6A001.a.2.e, 6A002.a.1.c, 6A008.l.3, 6B008, 8A001.b, 8A001.d, 8A002.o.3.b; and

* * * * *

(vi) * * *

(B) Controlled by 5D001.a, specially designed for the "development" or "production" of equipment, functions or features controlled by 5A001.b.5 and 5A001.h; and

* * * * *

(vii) * * *

(C) Controlled by 5E001.a for the "development" or "production" of digitally controlled radio receivers controlled by 5A001.b.5 and radio frequency (RF) transmitting equipment controlled by 5A001.h; or 5D001.a for "software" specially designed for the "development" or "production" of digitally controlled radio receivers controlled by 5A001.b.5 and radio frequency (RF) transmitting equipment controlled by 5A001.h; and

* * * * *

### § 740.17 [Amended]

■ 5. Section 740.17 is amended by removing the phrase "5A002.a.1, .a.2, .a.5, .a.6, or .a.9" and adding in its place "5A002.a.1, .a.2, .a.5, .a.6, .a.9, or .b" in the introductory paragraph and paragraphs (a)(1)(i), (a)(2), and (b)(1).

## PART 742—[AMENDED]

■ 6. The authority citation for Part 742 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *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 of May 7, 2003, 68 FR 26459, May 16, 2003; Notice of August 12, 2010, 75 FR 50681 (August 16, 2010); Notice of November 4, 2010, 75 FR 68673 (November 8, 2010).

■ 7. Section 742.14 is amended by revising paragraph (a) and the introductory text to paragraph (b) to read as follows:

### § 742.14 Significant Items: Hot Section Technology for the Development, Production or Overhaul of Commercial Aircraft Engines, Components, and Systems.

(a) *License requirement.* Licenses are required for all destinations, except Canada, for ECCNs having an "SI" under the "Reason for Control" paragraph. These items include hot section technology for the development, production or overhaul of commercial aircraft engines controlled under ECCN 9E003.a.1 through a.8, .h,.i and .j, and related controls.

(b) *Licensing policy.* Pursuant to section 6 of the Export Administration Act of 1979, as amended, foreign policy controls apply to technology required for the development, production or overhaul of commercial aircraft engines controlled by ECCN 9E003a.1 through a.8, .h,.i, and .j, and related controls. These controls supplement the national security controls that apply to these items. Applications for export and reexport to all destinations will be reviewed on a case-by-case basis to determine whether the export or reexport is consistent with U.S. national security and foreign policy interests. The following factors are among those that will be considered to determine what action will be taken on license applications:

* * * * *

### § 742.15 [Amended]

■ 8. Section 742.15 is amended by removing the phrase "5A002.a.1, a.2, a.5, a.6 and a.9; 5D002.a or c.1 for equipment controlled for EI reasons in ECCN 5A002;" and adding in its place "5A002.a.1, .a.2, .a.5, .a.6, .a.9, and .b; 5D002.a, .c.1 or .d for equipment and "software" controlled for EI reasons in ECCNs 5A002 or 5D002;" in paragraph (a)(1).

## PART 743—[AMENDED]

■ 9. The authority citations for Part 743 are revised to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.;* 50 U.S.C. 1701 *et seq.;* E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2010, 75 FR 50681 (August 16, 2010).

■ 10. Section 743.1 is amended by:

■ a. Revising the note to paragraph (c)(1)(ii) and paragraph (c)(1)(v), the introductory text of paragraph (c)(1)(vi) and paragraph (c)(1)(viii) as set forth below;

■ b. Removing and reserving paragraph (c)(1)(vii).

### § 743.1 Wassenaar Arrangement.

* * * * *

(c) * * *

(1) * * *

(ii) * * *

**Note to paragraph (c)(1)(ii):** *Reports for 2D001,* are for "software", other than that controlled by 2D002, specially designed for the "development" or "production" of equipment as follows:

a. Equipment controlled by 2B001.a or .b (changing 6μm to 5.1μm in 2B001.a.1 and 2B001.b.1.a; and adding "a positioning accuracy with "all compensations available" equal to or less (better) than 5.1μm along any linear axis" to the existing text for 2B001.b.2)(See Technical Notes 5 and 6 to Product Group B in Category 2 of the Commerce Control List for acceptable positioning accuracy measurements.);

b. Deep-hole-drilling machines controlled by 2B001.f.; or

c. "Numerically controlled" or manual machine tools controlled by 2B003.

*Reports for 2E001,* are for "technology" according to the General Technology Note for the "development" of "software" as described in this paragraph for 2D001, or for equipment as follows:

a. Equipment controlled by 2B001.a, .b (changing 6μm to 5.1μm in 2B001.a.1 and 2B001.b.1.a; and adding "a positioning accuracy with "all compensations available" equal to or less (better) than 5.1μm along any linear axis" to the existing text for 2B001.b.2) (See Technical Notes 5 and 6 to Product Group B in Category 2 of the Commerce Control List for acceptable positioning accuracy measurements.);

b. Deep-hole-drilling machines controlled by 2B001.f.; or

c. "Numerically controlled" or manual machine tools controlled by 2B003.

*Reports for 2E002,* are for "technology" according to the General Technology Note for the "production" of equipment as follows:

a. Equipment controlled by 2B001.a or .b (changing 6μm to 5.1μm in 2B001.a.1 and 2B001.b.1.a; and adding "a positioning accuracy with "all compensations available" equal to or less (better) than 5.1μm along any linear axis" to the existing text for 2B001.b.2)(See Technical Notes 5 and 6 to Product Group B in Category 2 of the Commerce Control List for acceptable positioning accuracy measurements.);

b. Deep-hole-drilling machines controlled by 2B001.f.; or

c. "Numerically controlled" or manual machine tools controlled by 2B003.

* * * * *

(v) *Category 5:* 5A001.b.3; 5B001.a (items specially designed for 5A001.b.3, b.5 or .h); 5D001.a (specially designed for the "development" or "production" of equipment, function, or features in 5A001.b.3, b.5 or .h) and 5D001.b (specially designed or modified to support "technology" under 5E001.a as described in this paragraph); and 5E001.a (for the "development" or "production" of equipment, functions or features specified by 5A001.b.3, b.5 or .h or "software" in 5D001.a or 5D001.b as described in this paragraph);

(vi) *Category 6:* 6A001.a.1.b (changing 10 kHz to 5 kHz and adding the text "or a sound pressure level exceeding 224 dB (reference 1 μPa at 1 m) for equipment with an operating frequency in the band from 5kHz to 10 kHz inclusive" to the existing text in 6A001.a.1.b.1), and 6A001.a.2.d; 6A002.b; 6A004.c and d; 6A006.c.1; 6A008.d, .h, and .k;

* * * * *

(viii) Category 8: 8A001.c; 8A002.b (for 8A001.b, .c, .d), .h, .j, .o.3, and .p; 8D001 (for commodities listed in this paragraph, as well as 8A001.b, c, and d); 8D002; 8E001 (for commodities listed in this paragraph, as well as 8A001.b, c and d); and 8E002.a; and

* * * * *

## PART 772—[AMENDED]

■ 11. The authority citation for Part 772 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.;* 50 U.S.C. 1701 *et seq.;* E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 12, 2010, 75 FR 50681 (August 16, 2010).

■ 12. Section 772.1 is amended by:
■ a. Amend the definition for "Civil aircraft", by removing the reference "(Cat 1, 3, and 7)" and by adding the reference "(Cat 1, 3, 4, 7, and 9)", in its place. ;
■ b. Adding in alphabetical order new definitions for "cryptographic activation" and "Radiant sensitivity", and "Tip shroud" ; and
■ c. Revising the definition for the term "frequency switching time", "frequency synthesizer", "information security", and "object code", to read as follows:

### § 772.1 Definitions of Terms as Used in the Export Administration Regulations (EAR).

* * * * *

"*Cryptographic activation*" (Cat 5P2) Any technique that activates or enables cryptographic capability, via a secure mechanism that is implemented by the manufacturer of the item and is uniquely bound to the item or customer for which the cryptographic capability is being activated or enabled (*e.g.,* a serial number-based license key or an authentication instrument such as a digitally signed certificate).

*Technical Note to definition of* "*Cryptographic activation*"*:* "Cryptographic activation" techniques and mechanisms may be implemented as hardware, "software" or "technology".

* * * * *

"*Frequency switching time*". (Cat 3 and 5)—The time (*i.e.,* delay), taken by a signal, when switched from an initial specified output frequency, to arrive at or within ±0.05% of a final specified output frequency. Items having a specified frequency range of less than ±0.05% around their centre frequency are defined to be incapable of frequency switching.

"*Frequency synthesizer*". (Cat 3)—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.

* * * * *

"*Information security*". (Cat 5)—All the means and functions ensuring the accessibility, confidentiality or integrity of information or communications, excluding the means and functions intended to safeguard against malfunctions. This includes "cryptography", "cryptographic activation", "cryptanalysis", protection against compromising emanations and computer security.

*Technical Note to definition of* "*Information security*"*:* "*Cryptanalysis*"*: the analysis of a cryptographic system or its inputs and outputs to derive confidential variables or sensitive data, including clear text. (ISO 7498–2–1988 (E), paragraph 3.3.18)*

* * * * *

"*Object code*". (or object language) (Cat 9)—An equipment executable form of a convenient expression of one or more processes ("source code" (or source language)) that has been compiled by a programming system. (See also "source code")

* * * * *

"Radiant sensitivity" (Cat 6)—Radiant sensitivity (mA/W) = 0.807 × (wavelength in nm) × 'Quantum Efficiency (QE)'

**Technical Note:** 'QE' is usually expressed as a percentage; however, for the purposes of this formula 'QE' is expressed as a decimal number less than one, e.g., 78% is 0.78.

* * * * *

"Tip shroud" (Cat 9)—A stationary ring component (solid or segmented) attached to the inner surface of the engine turbine casing or a feature at the outer tip of the turbine blade, which primarily provides a gas seal between the stationary and rotating components.

* * * * *

## PART 774—[AMENDED]

■ 13. The authority citation for Part 774 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.;* 50 U.S.C. 1701 *et seq.;* 10 U.S.C. 7420; 10 U.S.C. 7430(e); 22 U.S.C. 287c, 22 U.S.C. 3201 *et seq.,* 22 U.S.C. 6004; 30 U.S.C. 185(s), 185(u); 42 U.S.C. 2139a; 42 U.S.C. 6212; 43 U.S.C. 1354; 15 U.S.C. 1824a; 50 U.S.C. app. 5; 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; Notice of August 12, 2010, 75 FR 50681 (August 16, 2010).

■ 14. Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", ECCN 1A002, List of Items Controlled section, Items paragraph is amended by:
■ a. Revising the introductory text to Notes 2 and 3 after paragraph b.2;
■ b. Adding a new Note 4;

**1A002 "Composite" structures or laminates, having any of the following (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

**Note 2:** 1A002 does not control semi-finished items, specially designed for purely civilian applications as follows:

* * * * *

**Note 3:** 1A002.b.1 does not apply to semi-finished items containing a maximum of two dimensions of interwoven filaments and specially designed for applications as follows:

* * * * *

**Note 4:** 1A002 does not apply to finished items specially designed for a specific application.

■ 15. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", ECCN 1A004, List of Items Controlled section the Items paragraph is amended by:
■ a. Revising the introductory text to paragraph .c;
■ b. Revising the Note that appears after Note 2 to paragraph 1A004.d, to read as follows:

**1A004 Protective and detection equipment and components, not specially designed for military use, as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

c. Detection systems, specially designed or modified for detection or identification of any of the following, and specially designed components therefor:

* * * * *

d. * * *

**Note 2:** * * *

**Note:** 1A004 does not control:

a. Personal radiation monitoring dosimeters;

b. Equipment limited by design or function to protect against hazards specific to residential safety or civil industries, including:

1. Mining;
2. Quarrying;
3. Agriculture;
4. Pharmaceutical;
5. Medical;
6. Veterinary;
7. Environmental;
8. Waste management;
9. Food industry.

* * * * *

■ 16. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", Export Control Classification Number (ECCN) 1B001, List of Items Controlled section the Items paragraph is amended by revising paragraph .c, including removing the Note to paragraph .c, to read as follows:

**1B001 Equipment for the production or inspection of "composite" structures or laminates controlled by 1A002 or "fibrous or filamentary materials" controlled by 1C010, as follows (see List of Items Controlled), and specially designed components and accessories therefor.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

c. Multidirectional, multidimensional weaving machines or interlacing machines, including adapters and modification kits, specially designed or modified for weaving, interlacing or braiding fibers for "composite" structures;

**Technical Note:** For the purposes of 1B001.c the technique of interlacing includes knitting.

* * * * *

■ 17. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", Export Control Classification Number (ECCN) 1C003 is amended by removing the phrase "*initial permeability*" and adding in its place "*initial relative permeability*" in the Technical Note of paragraph .a in the Items paragraph of the List of Items Controlled section.

■ 18. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", Export Control Classification Number (ECCN) 1C006, List of Items Controlled section the Items paragraph is amended by:

■ a. Revising paragraph .c, to read as follows; and

■ b. Removing paragraph .e;

**1C006 Fluids and lubricating materials, as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

c. Damping or flotation fluids having all of the following:

c.1. Purity exceeding 99.8%;

c.2. Containing less than 25 particles of 200 μm or larger in size per 100 ml; and

c.3. Made from at least 85% of any of the following:

c.3.a. Dibromotetrafluoroethane (CAS 25497 30-7, 124-73-2, 27336-23- 8);

c.3.b. Polychlorotrifluoroethylene (oily and waxy modifications only); *or*

c.3.c. Polybromotrifluoroethylene;

* * * * *

■ 19. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", ECCN 1C008, List of Items Controlled section the Items paragraph is amended by:

■ a. Revising paragraphs .a and .b; and

■ b. Revising the Technical Note that appears after paragraph .f, to read as follows:

**1C008 Non-fluorinated polymeric substances as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. Imides as follows:

a.1. Bismaleimides;

a.2. Aromatic polyamide-imides (PAI) having a 'glass transition temperature ($T_g$)' exceeding 563 K (290° C);

a.3. Aromatic polyimides;

a.4. Aromaticpolyetherimides having a 'glass transition temperature ($T_g$)' exceeding 513K (240° C).

**Note:** 1C008.a controls the substances in liquid or solid "fusible" form, including resin, powder, pellet, film, sheet, tape, or ribbon.

N.B.: For non-"fusible" aromatic polyimides in film, sheet, tape, or ribbon form, see ECCN 1A003.

b. Thermoplastic liquid crystal copolymers having a heat distortion temperature exceeding 523 K (250° C) measured according to ISO 75–2 (2004), method A, or national equivalents, with a load of 1.80 N/mm² and composed of:

b.1. Any of the following compounds:

b.1.a. Phenylene, biphenylene or naphthalene; *or*

b.1.b. Methyl, tertiary-butyl or phenyl substituted phenylene, biphenylene or naphthalene; *and*

b.2. Any of the following acids:

b.2.a. Terephthalic acid (CAS 100–21–0);

b.2.b. 6-hydroxy-2 naphthoic acid (CAS 16712–64–4); *or*

b.2.c. 4-hydroxybenzoic acid (CAS 99–96–7);

* * * * *

f. * * *

**Technical Note:** The 'glass transition temperature ($T_g$)' for 1C008 materials is determined using the method described in ISO 11357–2 (1999) or national equivalents. In addition, for 1C008.a.2 materials,'glass transition temperature ($T_g$)' is determined on a PAI test specimen having initially been cured at a minimum temperature of 310° C for a minimum of 15 minutes.

■ 20. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", ECCN 1C010, List of Items Controlled section the Items paragraph is amended by revising Note 2 and the Technical Note of paragraph .e to read as follows:

**1C010 "Fibrous or filamentary materials" as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

e. * * *

**Note 2:** 1C010.e does not apply to:

a. Epoxy resin "matrix" impregnated carbon "fibrous or filamentary materials" (prepregs) for the repair of "civil aircraft" structures or laminates, having all of the following:

1. An area not exceeding 1 m²;
2. A length not exceeding 2.5 m; *and*
3. A width exceeding 15 mm;

b. Fully or partially resin-impregnated or pitch-impregnated mechanically chopped, milled or cut carbon "fibrous or filamentary materials" 25.0 mm or less in length when using a resin or pitch other than those specified by 1C008 or 1C009.b.

**Technical Note:** The 'Dynamic Mechanical Analysis glass transition temperature (DMA $T_g$)' for materials controlled by 1C010.e is determined using the method described in ASTM D 7028–07, or equivalent national standard, on a dry test specimen. In the case of thermoset materials, degree of cure of a dry test specimen shall be a minimum of 90% as defined by ASTM E 2160 04 or equivalent national standard.

■ 21. Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", ECCN 1C011, List of Items Controlled section is amended by:

■ a. Revising the MT paragraph of the License Requirements section;

■ b. Adding paragraphs b and c to the Related Controls paragraph; and

■ c. Revising paragraph .b in the Items paragraph, to read as follows:

**1C011 Metals and compounds, as follows (see List of Items Controlled).**

**License Requirements**

* * * * *

MT applies to 1C011.a and MT Column 1.b

* * * * *

**List of Items Controlled**

*Unit:* * * *

*Related Controls:* (1.) See also 1C018 and 1C111. (2.) The following are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR 121.1 Category V): a) Materials controlled by 1C011.a, and metal fuels in particle form, whether spherical, atomized, spheroidal, flaked or ground, manufactured from material consisting of 99 percent or more of items controlled by 1C011.b; and b) Metal powders mixed with other substances to form a mixture formulated for military purposes.

*Related Definitions:* * * *

*Items:*

* * * * *

b. Boron or boron alloys, with a particle size of 60 μm or less, as follows:

b.1. Boron with a purity of 85% by weight or more;

b.2. Boron alloys with a boron content of 85% by weight or more;

**Note:** The metals or alloys specified by 1C011.b also refer to metals or alloys encapsulated in aluminum, magnesium, zirconium or beryllium.

* * * * *

■ 22. Supplement No. 1 to Part 774 (the Commerce Control List), Category 1 "Special Materials and Related Equipment, Chemicals, "Microorganisms," and "Toxins"", ECCN 1C111, List of Items Controlled section is amended by:

■ a. Adding a new note (3) in the Related Controls paragraph in the List of Items Controlled section as set forth below; and

■ b. Removing paragraph .a.2.b in the Items paragraph of the List of Items Controlled section.

**1C111 Propellants and constituent chemicals for propellants, other than those specified in 1C011, as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

Related Controls: * * *

(3) See 1C011.b for controls on boron and boron alloys.

* * * * *

■ 23. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2 Materials Processing, ECCN 2A001 is amended by:

■ a. Revising the GBS and CIV paragraphs in the License Exceptions section, to read as set forth below;

■ b. Revising paragraph .a in the Items Paragraph of the List of Items Controlled, to read as set forth below; and

■ c. Removing and reserving paragraph .b in the Items Paragraph of the List of Items Controlled.

**2A001 Anti-friction bearings and bearing systems, as follows, (see List of Items Controlled) and components therefor.**

* * * * *

**License Exceptions**

* * * * *

GBS: Yes, for 2A001.a,

N/A for MT

CIV: Yes, for 2A001.a,

N/A for MT

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

a. Ball bearings and solid roller bearings, having all tolerances specified by the manufacturer in accordance with ISO 492 Tolerance Class 4 (or national equivalents), or better, and having both rings and rolling elements (ISO 5593), made from monel or beryllium;

**Note:** 2A001.a does not control tapered roller bearings.

* * * * *

■ 24. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2 Materials Processing, ECCN 2B001, List of Items Controlled section the Items paragraph is amended by revising the introductory text to paragraph .e.2 to read as follows:

**2B001 Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or "composites", which, according to the manufacturer's technical specifications, can be equipped with electronic devices for "numerical control"; and specially designed components as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

e. * * *

e.2. At least two rotary axes having all of the following:

* * * * *

■ 25. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2 Materials Processing, ECCN 2B005, List of Items Controlled section the Items paragraph is amended by revising the introductory text to paragraph .g to read as follows:

**2B005 Equipment specially designed for the deposition, processing and in-process control of inorganic overlays, coatings and surface modifications, as follows, for non-electronic substrates, by processes shown in the Table and associated Notes following 2E003.f, and specially designed automated handling, positioning, manipulation and control components therefor.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

g. Ion plating production equipment capable of *in situ* measurement of any of the following:

* * * * *

■ 26. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2 Materials Processing, ECCN 2B006, List of Items Controlled section the Items paragraph is amended by:

■ a. Revising paragraph .a; and

■ b. Revising the Note that appears after .c, to read as follows:

**2B006 Dimensional inspection or measuring systems, equipment, and "electronic assemblies", as follows (see List of Items Controlled).**

**License Requirements**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. Computer controlled or "numerically controlled" Coordinate

Measuring Machines (CMM), having a three dimensional length (volumetric) maximum permissible error of length measurement ($E_{0,MPE}$) at any point within the operating range of the machine (*i.e.,* within the length of axes) equal to or less (better) than (1.7 + L/1,000) µm (L is the measured length in mm) according to ISO 10360–2 (2009);

**Technical Note:** The $E_{0,MPE}$ of the most accurate configuration of the CMM specified by the manufacturer (*e.g.,* best of the following: Probe, stylus length, motion parameters, environment) and with "all compensations available" shall be compared to the 1.7 + L/1,000 µm threshold.

* * * * *

c. * * *

**Note:** 2B006 includes machine tools, other than those specified by 2B001, that can be used as measuring machines, if they meet or exceed the criteria specified for the measuring machine function.

■ 27. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3A001 is amended by:

■ a. Revising paragraph CIV in the License Exceptions section, as set forth below;

■ b. Removing and reserving paragraph a.4 in the Items paragraph of the List of Items Controlled section; and

■ c. Revising paragraphs a.5, .b.2, .b.3, b.4, and the introductory text of b.11 in the Items paragraph of the List of Items Controlled section, to read as follows:

**3A001 Electronic components and specially designed components therefor, as follows (see List of Items Controlled).**

* * * * *

**License Exceptions**

* * * * *

CIV: Yes for 3A001.a.3, a.7, and a.11.

**List of Items Controlled**

* * * * *

*Items:*

a. * * *

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 an output rate greater than 500 million words per second;

a.5.a.2 A resolution of 10 bit or more, but less than 12 bit, with an output rate greater than 300 million words per second;

a.5.a.3. A resolution of 12 bit with an output rate greater than 200 million words per second;

a.5.a.4. A resolution of more than 12 bit but equal to or less than 14 bit with an output rate greater than 125 million words per second; *or*

a.5.a.5. A resolution of more than 14 bit with an output rate greater than 20 million words per second;

**Technical Notes:**

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

2. The number of bits in the output word is equal to the resolution of the ADC.

3. The output rate is the maximum output rate of the converter, regardless of architecture or oversampling.

4. For the 'multiple channel ADCs', the outputs are not aggregated and the output rate is the maximum output rate of any single channel.

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

6. Vendors may also refer to the output rate as sampling rate, conversion rate or throughput rate. It is often specified in megahertz (MHz) or mega samples per second (MSPS).

7. For the purpose of measuring output rate, one output word per second is equivalent to one Hertz or one sample per second.

8. 'Multiple channel ADCs' are defined as devices which integrate more than one ADC, designed so that each ADC has a separate analog input.

9. 'Interleaved ADCs' are defined as devices which have multiple ADC converter units that sample the same analog input at different times such that when the outputs are aggregated, the analog input has been effectively sampled and converted at a higher sampling rate.

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

a.5.b.1. A resolution of 10 bit or more with an 'adjusted update rate' of 3,500 MSPS or greater; or

a.5.b.2. A resolution of 12-bit or more with an 'adjusted update rate' of equal to or greater than 1,250 MSPS and having any of the following:

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

a.5.b.2.b. 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.

**Technical Notes:**

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.

* * * * *

b. * * *

b.2. Microwave "Monolithic Integrated Circuits" (MMIC) power amplifiers having any of the following:

b.2.a. Rated for operation at frequencies exceeding 3.2 GHz up to and including 6.8 GHz and with an average output power greater than 4W (36 dBm) with a "fractional bandwidth" greater than 15%;

b.2.b. Rated for operation at frequencies exceeding 6.8 GHz up to and including 16 GHz and with an average output power greater than 1W (30 dBm) with a "fractional bandwidth" greater than 10%;

b.2.c. Rated for operation at frequencies exceeding 16 GHz up to and including 31.8 GHz and with an average output power greater than 0.8W (29 dBm) with a "fractional bandwidth" greater than 10%;

b.2.d. Rated for operation at frequencies exceeding 31.8 GHz up to and including 37.5 GHz and with an average output power greater than 0.1 nW;

b.2.e. Rated for operation at frequencies exceeding 37.5 GHz up to and including 43.5 GHz and with an average output power greater than 0.25W (24 dBm) with a "fractional bandwidth" greater than 10%; *or*

b.2.f. Rated for operation at frequencies exceeding 43.5 GHzand with an average output power greater than 0.1 nW.

**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.f, is determined by the lowest average output power 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 having any of the following:

b.3.a. Rated for operation at frequencies exceeding 3.2 GHz up to and including 6.8 GHz and having an average output power greater than 60W (47.8 dBm);

b.3.b. Rated for operation at frequencies exceeding 6.8 GHz up to and including 31.8 GHz and having an average output power greater than 20W (43 dBm);

b.3.c. Rated for operation at frequencies exceeding 31.8 GHz up to and including 37.5 GHz and having an average output power greater than 0.5W (27 dBm);

b.3.d. Rated for operation at frequencies exceeding 37.5 GHz up to and including 43.5 GHz and having an average output power greater than 1W (30 dBm); *or*

b.3.e. Rated for operation at frequencies exceeding 43.5 GHz and with an average output power greater than 0.1 nW;

**Note:** The control status of a transistor 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 average output power control threshold.

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

b.4.a. Rated for operation at frequencies exceeding 3.2 GHz up to and including 6.8 GHz and with an average output power greater than 60W (47.8 dBm) with a "fractional bandwidth" greater than 15%;

b.4.b. Rated for operation at frequencies exceeding 6.8 GHz up to and including 31.8 GHz and with an average output power greater than 15W (42 dBm) with a "fractional bandwidth" greater than 10%;

b.4.c. Rated for operation at frequencies exceeding 31.8 GHz up to and including 37.5 GHz and with an average output power greater than 0.1 nW;

b.4.d. Rated for operation at frequencies exceeding 37.5 GHz up to and including 43.5 GHz and with an average output power greater than 1W (30 dBm) with a "fractional bandwidth" greater than 10%;

b.4.e. Rated for operation at frequencies exceeding 43.5 GHz and with an average output power greater than 0.1 nW; *or*

b.4.f. Rated for operation at frequencies above 3.2 GHz and all of the following:

b.4.f.1. An average output power (in watts), P, greater than 150 divided by the maximum operating frequency (in GHz) squared [$P > 150\ W*GHz^2/f_{GHz}^2$];

b.4.f.2. A "fractional bandwidth" of 5% or greater; *and*

b.4.f.3. Any two sides perpendicular to one another with length d (in cm) equal to or less than 15 divided by the lowest operating frequency in GHz [$d \leq 15\ cm*GHz/f_{GHz}$];

**Technical Note:** 3.2 GHz should be used as the lowest operating frequency ($f_{GHz}$) in the formula in 3A001.b.4.f.3., for amplifiers that have a rated operation range extending downward to 3.2 GHz and below [$d \leq 15cm*GHz/3.2\ f_{GHz}$].

N.B.: MMIC power amplifiers should be evaluated against the criteria in 3A001.b.2.

**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 average output power control threshold.

* * * * *

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

* * * * *

■ 28. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3A002, List of Items Controlled section the Items paragraph is amended by revising paragraphs .c and .d to read as follows:

**3A002 General purpose electronic equipment and accessories therefor, as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

c. Radio-frequency "signal analyzers" as follows:

c.1. "Signal analyzers" having a 3 dB resolution bandwidth (RBW) exceeding 10 MHz anywhere within the frequency range exceeding 31.8 GHz but not exceeding 37.5 GHz;

c.2. "Signal analyzers" having Displayed Average Noise Level (DANL) less (better) than −150 dBm/Hz anywhere within the frequency range exceeding 43.5 GHz but not exceeding 70 GHz;

c.3. "Signal analysers"having a frequency exceeding 70 GHz;

c.4. "Dynamic signal analyzers" having a "real-time bandwidth" exceeding 40 MHz;

**Note:** 3A002.c.4 does not control those "dynamic signal analyzers" using only constant percentage bandwidth filters (also known as octave or fractional octave filters).

d. Frequency synthesized signal generators producing output frequencies, the accuracy and short term and long term stability of which are controlled, derived from or disciplined by the internal master reference oscillator, and having any of the following:

d.1. Specified to generate a 'pulse duration' of less than 100 ns anywhere within the synthesized frequency range exceeding 31.8 GHz but not exceeding 70 GHz;

d.2. An output power exceeding 100 mW (20 dBm) anywhere within the synthesized frequency range exceeding 43.5 GHz but not exceeding 70 GHz;

d.3. A "frequency switching time" as specified by any of the following:

d.3.a. Less than 312 ps;

d.3.b. Less than 100 µs for any frequency change exceeding 1.6 GHz within the synthesized frequency range exceeding 3.2 GHz but not exceeding 10.6 GHz;

d.3.c. Less than 250 µs for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 10.6 GHz but not exceeding 31.8 GHz;

d.3.d. Less than 500 µs for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 31.8 GHz but not exceeding 43.5 GHz;

d.3.e. Less than 1 ms for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 43.5 GHz but not exceeding 56 GHz; *or*

d.3.f. Less than 1 ms for any frequency change exceeding 2.2 GHz within the synthesized frequency range exceeding 56 GHz but not exceeding 70 GHz;

d.4. At synthesized frequencies exceeding 3.2 GHz but not exceeding 70 GHz, and having all of the following:

d.4.a. A single sideband (SSB) phase noise, in dBc/Hz, better than—($126+20\ \log_{10}F-20\ \log_{10}f$) for $10\ Hz < F < 10\ kHz$; *and*

d.4.b. A single sideband (SSB) phase noise, in dBc/Hz, better than—(114+20

$\log_{10}F - 20 \log_{10}f$) for 10 kHz ≤ F < 500 kHz; *or*

**Technical Note:** In 3A002.d.4, F is the offset from the operating frequency in Hz and f is the operating frequency in MHz.

d.5. A maximum synthesized frequency exceeding 70 GHz;

**Note 1:** For the purpose of 3A002.d, frequency synthesized signal generators include arbitrary waveform and function generators.

**Note 2:** 3A002.d. does not control equipment in which the output frequency is either produced by the addition or subtraction of two or more crystal oscillator frequencies, or by an addition or subtraction followed by a multiplication of the result.

**Technical Notes:** 1. Arbitrary waveform and function generators are normally specified by sample rate (*e.g.,* GSample/s), which is converted to the RF domain by the Nyquist factor of two. Thus, a 1 GSample/s arbitrary waveform has a direct output capability of 500 MHz. Or, when oversampling is used, the maximum direct output capability is proportionately lower.

2. For the purposes of 3A002.d.1, 'pulse duration' is defined as the time interval between the leading edge of the pulse achieving 90% of the peak and the trailing edge of the pulse achieving 10% of the peak.

* * * * *

■ 29. Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3A991 is amended by revising paragraph .c in the Items paragraph of the List of Items Controlled section to read as follows:

**3A991 Electronic devices and components not controlled by 3A001.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

c. Analog-to-digital converters having any of the following:

c.1. A resolution of 8 bit or more, but less than 12 bit, with an output rate greater than 200 million words per second;

c.2. A resolution of 12 bit with an output rate greater than 105 million words per second;

c.3. A resolution of more than 12 bit but equal to or less than 14 bit withan output rate greater than 10 million words per second; *or*

c.4. A resolution of more than 14 bit with an output rate greater than 2.5 million words per second.

* * * * *

■ 30. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3B001, List of Items Controlled section the Items paragraph is amended by revising paragraphs .d.1, .d.2, .f.1.b, and .f.2, to read as follows:

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

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

d. * * *

d.1. Equipment with cassette-to-cassette operation and load-locks, and designed according to the manufacturer's specifications or optimized for use in the production of semiconductor devices with critical dimensions of 65 nm or less;

d.2. Equipment specially designed for equipment controlled by 3B001.e. and designed according to the manufacturer's specifications or optimized for use in the production of semiconductor devices with critical dimensions of 65 nm or less;

* * * * *

f. * * *

f.1. * * *

f.1.b. Capable of producing a pattern with a "Minimum Resolvable Feature size" (MRF) of 95 nm or less;

**Technical Note:** The 'Minimum Resolvable Feature size' (MRF) is calculated by the following formula:

$$MRF = \frac{(\text{an exposure light source wavelength in nm}) \times (\text{K factor})}{\text{numerical aperture}}$$

where the K factor = 0.35

f.2 Imprint lithography equipment capable of production features of 95 nm or less;

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

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

* * * * *

■ 31. Supplement No. 1 to Part 774 (the Commerce Control List), Category 3Electronics, ECCN 3C001 is amended by removing the text in the Related Definitions paragraph of the List of Items Controlled section and adding in its place "N/A".

■ 32. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3 Electronics, ECCN 3E001, List of Items Controlled section the Items paragraph is amended by revising Note 2 to read as follows:

**3E001 "Technology" according to the General Technology Note for the "development" or "production" of equipment or materials controlled by 3A (except 3A292, 3A980, 3A981, 3A991 3A992, or 3A999), 3B (except 3B991 or 3B992) or 3C (except 3C992).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

**Note 2:** 3E001 does not control "technology" for the "development" or "production" of integrated circuits controlled by 3A001.a.3 to a.12, 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.

■ 33. Supplement No. 1 to Part 774 (the Commerce Control List), Category 4 Computers, ECCN 4A001 is amended by revising the Items paragraph in the List of Items controlled section to read as follows:

**4A001 Electronic computers and related equipment, having any of the following (see List of Items Controlled), and "electronic assemblies" and specially designed components therefor.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. Specially designed to have any of the following:

a.1. Rated for operation at an ambient temperature below 228 K (−45 °C) or above 358 K (85 °C); or

**Note:** 4A001.a.1 does not apply to computers specially designed for civil automobile, railway train or "civil aircraft" applications.

a.2. Radiation hardened to exceed any of the following specifications:

a.2.a. A total dose of 5 x $10^3$ Gy (Si);

a.2.b. A dose rate upset of 5 x $10^6$ Gy (Si)/s; *or*

a.2.c. Single Event Upset of 1 x $10^8$ Error/bit/day;

**Note:** 4A001.a.2 does not apply to computers specially designed for "civil aircraft" applications.

b. [RESERVED]

■ 34. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5 Telecommunications and "Information Security", Part I Telecommunications is amended by:

■ a. Removing the reference "N.B." and adding in its place "N.B.1." at the beginning of Category 5—Part I; and

■ b. Adding a new Nota Bene (N.B.) to read as follows:

**CATEGORY 5—TELECOMMUNICATIONS AND "INFORMATION SECURITY"**

**PART I. TELECOMMUNICATIONS**

**Notes:**

1. * * *

N.B.1.: For "lasers" specially designed for telecommunications equipment or systems, see ECCN 6A005.

N.B.2.: See also Category 5, Part 2 for equipment, components, and "software" performing or incorporating "information security" functions.

* * * * *

■ 35. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5 Telecommunications and "Information Security", Part I Telecommunications, ECCN 5A001 is amended by:

■ a. Revising the License Requirements section;

■ b. Revising the License Exceptions section;

■ c. Removing paragraphs c.1 and c.2, and adding in their place a new paragraph .cin the Items paragraph of the List of Items Controlled section, as set forth below; and

■ d. Revising paragraph.h in the Items paragraph of the List of Items Controlled section, to read as follows:

**5A001 Telecommunications systems, equipment, components and accessories, as follows (see List of Items Controlled).**

**License Requirements**

*Reason for Control:* NS, AT

| Control(s) | Country chart |
|---|---|
| NS applies to 5A001.a, .e, and .h. | NS Column 1. |
| NS applies to 5A001.b, .c, .d, .f, and .g. | NS Column 2. |
| AT applies to entire entry ..... | AT Column 1. |

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

**License Exceptions**

LVS: N/A for 5A001.a, b.5, e, and h; $5000 for 5A001b.1, b.2, b.3, b.6, d, f, and g; $3000 for 5A001.c.

GBS: Yes, except 5A001.a, b.5, e, and h.

CIV: Yes, except 5A001.a, b.3, b.5, e, and h.

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

c. Optical fibers of more than 500 m in length and specified by the manufacturer as being capable of withstanding a 'proof test' tensile stress of $2 \times 10^9$ N/m$^2$ or more;

N.B.: For underwater umbilical cables, see 8A002.a.3.

**Technical Note:** 'Proof Test': on-line or off-line production screen testing that dynamically applies a prescribed tensile stress over a 0.5 to 3 m length of fiber at a running rate of 2 to 5 m/s while passing between capstans approximately 150 mm in diameter. The ambient temperature is a nominal 293 K (20 °C) and relative humidity 40%. Equivalent national standards may be used for executing the proof test.

* * * * *

h. Radio Frequency (RF) transmitting equipment designed or modified for prematurely activating or preventing the initiation of Improvised Explosive Devices (IEDs).

N.B.: See also ECCN 5A001.f and Category XI of the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120–130).

■ 36. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 5 Telecommunications and "Information Security", Part I Telecommunications, ECCN 5D001 is amended by revising the License Exceptions section to read as follows:

**5D001 "Software" as follows (see List of Items Controlled).**

* * * * *

**License Exceptions**

CIV: Yes, except for "software" controlled by 5D001.a and specially designed for the "development" or "production" of items controlled by 5A001.b.5 and 5A001.h.

TSR: Yes, except for exports and reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "software" controlled by 5D001.a and specially designed for items controlled by 5A001.b.5 and 5A001.h.

* * * * *

■ 37. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 5 Telecommunications and "Information Security", Part I Telecommunications, ECCN 5E001 is amended by:

■ a. Revising the License Exceptions section;

■ b. Revising paragraphs .b.4, .d.1, and .d.2in the Items paragraph of the List of Items Controlled section, to read as follows:

**5E001 "Technology" as follows (see List of Items Controlled).**

* * * * *

**License Exceptions**

CIV: N/A.

TSR: Yes, except for exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "technology" controlled by 5E001.a for the "development" or "production" of the following:

(1) Items controlled by 5A001.b.5 or 5A001.h; or

(2) "Software" controlled by 5D001.a that is specially designed for the "development" or "production" of equipment, functions or features controlled by 5A001.b.5 or 5A001.h.

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

b.4. "Technology" for the "development" of "spread spectrum" techniques, including "frequency hopping" techniques.

**Note:** 5E001.b.4 does not apply to "technology" for the "development" of civil cellular radio-communications systems.

* * * * *

d. * * *

d.1. Rated for operation at frequencies exceeding 3.2 GHz up to and including 6.8 GHz and with an average output power greater than 4 W (36 dBm) with a "fractional bandwidth" greater than 15%;

d.2. Rated for operation at frequencies exceeding 6.8 GHz up to and including 16 GHz and with an average output power greater than 1 W (30 dBm) with a "fractional bandwidth" greater than 10%;

* * * * *

■ 38. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 5 Part II—Telecommunications And "Information Security", ECCN 5A002 is amended by:

■ c. Revising the EI paragraph in the License Requirements section, as set forth below;

■ d. Revising Note 1 in the Related Controls paragraph of the List of Items Controlled section as set forth below;

■ e. Replacing a period with a semicolon in paragraph (a)(2) of the Note at the beginning of the Items paragraph of the List of Items Controlled section;

■ f. Removing "or" from the end of paragraph .g in the Note at the beginning of the Items paragraph of the List of Items Controlled section;

■ e. Removing the period at the end of paragraph .i and adding in its place "; or" in the Note at the beginning of the Items paragraph of the List of Items Controlled section;

■ f. Adding a new paragraph .j in the Note at the beginning of the Items paragraph of the List of Items Controlled section as set forth below;

■ g. Adding a new paragraph .b in the Items paragraph of the List of Items Controlled section to read as follows:

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

* * * * *

EI applies to 5A002.a.1, .a.2, .a.5, .a.6, .a.9 and .b. Refer to § 742.15 of the EAR.

**List of Items Controlled**

* * * * *

*Related Controls:* (1) 5A002 does not control the commodities listed in paragraphs (a), (d), (e), (f), (g), (i) and (j) in the Note in the items paragraph of this entry. These commodities are instead classified under ECCN5A992, and related software and technology are classified under ECCNs 5D992 and 5E992 respectively. * * *

* * * * *

*Items:*

**Note:** * * *

(j) Equipment, having no functionality specified by 5A002.a.2, 5A002.a.4, 5A002.a.7, or 5A002.a.8, where all cryptographic capability specified by 5A002.a meets any of the following:

1. It cannot be used; or

2. It can only be made useable by means of "cryptographic activation".

N.B.: See 5A002.a for equipment that has undergone "cryptographic activation".

* * * * *

b. Systems, equipment, application specific "electronic assemblies", modules and integrated circuits, designed or modified to enable an item to achieve or exceed the controlled performance levels for functionality specified by 5A002.a that would not otherwise be enabled.

■ 39. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5 Part II "Information Security", ECCN 5D002 is amended by:

■ a. Removing the phrase "5D002.a or c.1" and adding in its place "5D002.a,.c.1, or .d" in the EI paragraph of the License Requirements section; and

■ b. Adding a new paragraph .d to the Items paragraph of the List of Items Controlled section to read as follows:

**5D002 "Software" as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

d. "Software" designed or modified to enable an item to achieve or exceed the controlled performance levels for functionality specified by 5A002.a that would not otherwise be enabled.

■ 40. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5 Part II "Information Security", ECCN 5E002 is amended by:

■ a. Revising the Heading and the Items paragraph, as set forth below; and

■ b. Removing the phrase "ECCNs 5A002 or 5D002.a or 5D002.c" and adding in its place "ECCNs 5A002 or 5D002" in the EI paragraph and in the License Requirement Note of the License Requirements section.

**5E002 "Technology" as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. "Technology" according to the General Technology Note for the "development", "production" or "use" of equipment controlled by 5A002 or 5B002 or "software" controlled by 5D002.a or 5D002.c.

b. "Technology" to enable an item to achieve or exceed the controlled performance levels for functionality specified by 5A002.a that would not otherwise be enabled.

■ 41. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and "Lasers", ECCN 6A001 is amended by:

■ a. Revising the License Exceptions section;

■ b. Revising paragraph .a.1.a and the introductory text to paragraph .a.2 in the Items paragraph of the List of Items Controlled section;

■ c. Adding a new Note to paragraph .a.2 that appears after .a.2.fin the Items paragraph of the List of Items Controlled section; and

■ d. Removing and reserving paragraph .c and adding a *Nota Bene* (N.B.) to paragraph .cin the Items paragraph of the List of Items Controlled section, to read as follows:

**6A001 Acoustic systems, equipment and components, as follows (see List of Items Controlled).**

* * * * *

**License Exceptions**

LVS: $3000; N/A for 6A001.a.1.b.1 object detection and location systems having a transmitting frequency below 5 kHz or a sound pressure level exceeding 210 dB (reference 1 μPa at 1 m) for equipment with an operating frequency in the band from 30 kHz to 2 kHz inclusive; 6A001.a.1.e, 6A001.a.2.a.1, a.2.a.2, 6A001.a.2.a.3, a.2.a.5, a.2.a.6, 6A001.a.2.b; processing equipment controlled by 6A001.a.2.c, and specially designed for real time application with towed acoustic hydrophone arrays; a.2.e.1, a.2.e.2; and bottom or bay cable systems controlled by 6A001.a.2.f and having processing equipment specially designed for real time application with bottom or bay cable systems.

GBS: Yes for 6A001.a.1.b.4.

CIV: Yes for 6A001.a.1.b.4.

**List of Items Controlled**

* * * * *

*Items:*

a. * * *

a.1. * * *

a.1.a. Acoustic seabed survey equipment as follows:

a.1.a.1. Surface vessel survey equipment designed for sea bed topographic mapping and having all of the following:

a.1.a.1.a. Designed to take measurements at an angle exceeding 20° from the vertical;

a.1.a.1.b. Designed to measure seabed topography at seabed depths exceeding 600 m;

a.1.a.1.c.'Sounding resolution' less than 2; *and*

a.1.a.1.d. 'Enhancement' of the depth accuracy through compensation for all the following:

a.1.a.1.d.1. Motion of the acoustic sensor;

a.1.a.1.d.2. In-water propagation from sensor to the seabed and back; *and*

a.1.a.1.d.3. Sound speed at the sensor;

**Technical Notes:** 1. 'Sounding resolution' is the swath width (degrees) divided by the maximum number of soundings per swath.

2. 'Enhancement' includes the ability to compensate by external means.

a.1.a.2. Underwater survey equipment designed for seabed topographic mapping and having all of the following:

a.1.a.2.a. Designed or modified to operate at depths exceeding 300 m; *and*

a.1.a.2.b. 'Sounding rate' greater than 3,800;

**Technical Note:**

'Sounding rate' is the product of the maximum speed (m/s) at which the sensor can operate and the maximum number of soundings per swath.

a.1.a.3. Side Scan Sonar (SSS) or Synthetic Aperture Sonar (SAS), designed for seabed imaging and having all of the following:

a.1.a.3.a. Designed or modified to operate at depths exceeding 500 m; *and*

a.1.a.3.b. An 'area coverage rate' of greater than 570 $m^2/s$ while operating with both an 'along track resolution' and 'across track resolution' of less than 15 cm.

**Technical Notes:** 1. 'Area coverage rate' ($m^2/s$) is twice the product of the maximum sonar range (m) and the maximum speed (m/s) at which the sensor can operate.

2. 'Along track resolution' (cm), for SSS only, is the product of azimuth (horizontal) beamwidth (degrees) and maximum sonar range (m) and 0.873.

3. 'Across track resolution' (cm) is 75 divided by the signal bandwidth (kHz).

* * * * *

a.2. Passive systems, equipment and specially designed components therefor, as follows:

* * * * *

**Note:** 6A001.a.2 also applies to receiving equipment, whether or not related in normal application to separate active equipment, and specially designed components therefor.

* * * * *

N.B.: For diver deterrent acoustic systems, see 8A002.r.

■ 42. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and "Lasers", ECCN 6A002, List of Items Controlled section the Items paragraph is amended by adding a new Note to paragraph .d.3, to read as follows:

**6A002 Optical sensors.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

d. * * *

d.3. * * *

**Note:** 6A002.d.3 does not apply to encapsulated optical sensing fibers specially designed for bore hole sensing applications.

* * * * *

■ 43. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6 Sensors and "Lasers", ECCN 6A003, License of Items Controlled section the Items paragraph is amended by revising the last Technical Note in paragraph .b.4 to read as follows:

**6A003 Cameras.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

b.4. * * *

**Note 3:** * * *

b. * * *

4. * * *

**Technical Note:**

Instantaneous Field of View (IFOV) specified in Note 3.b is the lesser figure of the Horizontal IFOV or the Vertical IFOV.

Horizontal IFOV = horizontal Field of View (FOV)/number of horizontal detector elements

Vertical IFOV= vertical Field of View (FOV)/number of vertical detector elements.

* * * * *

■ 44. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6 Sensors and "Lasers", ECCN 6A005, List of Items Controlled section the Items paragraph is amended by:

■ a. Adding a new Note to paragraph .c.1;

■ b. Removing the period at the end of paragraph .f.4 and adding in its place a semi-colon;

■ c. Adding a new paragraph .g, to read as follows:

**6A005 "Lasers" (other than those described in 0B001.g.5 or .h.6), components and optical equipment, as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

c.1. * * *

**Note:** 6A005.c.1 does not apply to dye lasers or other liquid lasers, having a multimode output and a wavelength of 150 nm or more but not exceeding 600 nm and all of the following:

1. Output energy less than 1.5 J per pulse or a "peak power" less than 20 W; and

2. Average or CW output power less than 20 W.

* * * * *

f. * * *

f.4. Projection telescopes specially designed for use with "SHPL" systems;

g. "Laser acoustic detection equipment" having all of the following:

g.1. CW laser output power greater than or equal to 20 mW;

g.2. Laser frequency stability equal to or better (less) than 10 MHz;

g.3. Laser wavelengths equal to or exceeding 1,000 nm but not exceeding 2,000 nm;

g.4. Optical system resolution better (less) than 1 nm; *and*

g.5. Optical Signal to Noise ratio equal or exceeding to $10^3$.

**Technical Note:** "Laser acoustic detection equipment" is sometimes referred to as a Laser Microphone or Particle Flow Detection Microphone.

■ 45. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and "Lasers", ECCN 6A006 is amended by:

■ a. Revising the LVS paragraph of the License Exceptions section as set forth below;

■ b. Removing the "and" at the end of paragraph .c.3 in the Items paragraph of the List of Items Controlled section;

■ c. Removing the period and adding in its place "; and" at the end of paragraph .din the Items paragraph of the List of Items Controlled section; and

■ d. Adding a new paragraph .e in the Items paragraph of the List of Items Controlled section to read as follows:

**6A006 "Magnetometers," "magnetic gradiometers," "intrinsic magnetic gradiometers," underwater electric field sensors, "compensation systems," and specially designed components therefor, as follows (see List of Items Controlled).**

* * * * *

**License Exceptions**

LVS: $1500, N/A for 6A006.a.1; "Magnetometers" and subsystems defined in 6A006.a.2 using optically pumped or nuclear precession (proton/Overhauser) having a "sensitivity" lower

(better) than 2 pT (rms) per square root Hz; 6A006.d, and 6A006.e.

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

e. Underwater electromagnetic receivers incorporating magnetic field sensors specified by 6A006.a or underwater electric field sensors specified by 6A006.b.

* * * * *

■ 46. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6 Sensors and "Lasers", ECCN 6A008 is amended by:

■ a. Revising the LVS paragraph of the License Exceptions section as set forth below; and

■ b. Revising paragraph .l to read as follows:

**6A008 Radar systems, equipment and assemblies, having any of the following (see List of Items Controlled), and specially designed components therefor.**

* * * * *

**License Exceptions**

LVS: $5000; N/A for MT and for 6A008.j.1

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

1. Having data processing sub-systems and having any of the following:

1.1. "Automatic target tracking" providing, at any antenna rotation, the predicted target position beyond the time of the next antenna beam passage; or

**Note:** 6A008.1.1 does not control conflict alert capability in ATC systems, or marine or harbor radar.

1.2. [RESERVED]

1.3. [RESERVED]

1.4. Configured to provide superposition and correlation, or fusion, of target data within six seconds from two or more "geographically dispersed" radar sensors to improve the aggregate performance beyond that of any single sensor specified by 6A008.f, or 6A008.i.

N.B.: See also the U.S. Munitions List (22 CFR part 121).

**Note:** 6A008.1.4 does not apply to systems, equipment and assemblies designed for marine traffic control.

■ 47. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6 Sensors and "Lasers," ECCN 6D001 is amended by revising the License Exceptions section the TSR paragraph to read as follows:

**6D001 "Software" specially designed for the "development" or "production" of equipment controlled by 6A004, 6A005, 6A008, or 6B008.**

* * * * *

**License Exceptions**

CIV: * * *

TSR: Yes, except for the following:

(1) Items controlled for MT reasons;

(2) "Software" specially designed for the "development" or "production" of "space qualified" "laser" radar or Light Detection and Ranging (LIDAR) equipment defined in 6A008.j.1; or

(3) Exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "software" specially designed for the "development" or "production" of equipment controlled by 6A004.c or d, 6A008.d, h, k, or 1.3, or 6B008.

* * * * *

■ 48. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and "Lasers", ECCN 6D003, List of Items Controlled section the Items paragraph is amended by:

■ a. Adding new paragraphs .f.3 and .f.4; and

■ b. Revising paragraph .h.1, to read as follows:

**6D003 Other "software" as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

f. * * *

f.3. "Software" specially designed for "real time processing" of electromagnetic data using underwater electromagnetic receivers specified by 6A006.e;

f.4. "Source code" for "real time processing" of electromagnetic data using underwater electromagnetic receivers specified by 6A006.e;

* * * * *

h. * * *

h.1. Air Traffic Control (ATC) "software" application "programs" designed to be hosted on general purpose computers located at Air Traffic Control centers and capable of accepting radar target data from more than four primary radars;

* * * * *

■ 49. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6 Sensors and "Lasers", ECCN 6E001 is amended by revising the Heading and the TSR paragraphof the License Exceptions section to read as follows:

**6E001 "Technology" according to the General Technology Note for the "development" of equipment, materials or "software" controlled by 6A (except 6A991, 6A992, 6A994, 6A995, 6A996, 6A997, or 6A998), 6B (except 6B995), 6C (except 6C992 or 6C994), or 6D (except 6D991, 6D992, or 6D993).**

* * * * *

**License Exceptions**

CIV: * * *

TSR: Yes, except for the following:

(1) Items controlled for MT reasons;

(2) "Technology" for commodities controlled by 6A002.e, 6A004.e, or 6A008.j.1;

(3) "Technology" for "software" specially designed for "space qualified" "laser" radar or Light Detection and Ranging (LIDAR) equipment defined in 6A008.j.1 and controlled by 6D001 or 6D002;

(4) Exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "technology" for the "development" of the following: (a) Items controlled by 6A001.a.1.b, 6A001.a.1.e, 6A001.a.2.a.1, 6A001.a.2.a.2, 6A001.a.2.a.3, 6A001.a.2.a.5, 6A001.a.2.a.6, 6A001.a.2.b, 6A001.a.2.d, 6A001.a.2.e., 6A002.a.1.a, 6A002.a.1.b, 6A002.a.1.c, 6A002.a.2.a, 6A002.a.2.b, 6A002.a.3, 6A002.b, 6A002.c, 6A003.b.3, 6A003.b.4, 6A004.c, 6A004.d, 6A005.a.1, 6A006.a.2, 6A006.c.1, 6A006.d, 6A006.e, 6A006.g, 6A006.h, 6A008.d, 6A008.h, 6A008.k, 6A008.l.3, 6B008, 6D003.a; (b) Equipment controlled by 6A001.a.2.c or 6A001.a.2.f when specially designed for real time applications; or (c) "Software" controlled by 6D001 and specially designed for the "development" or "production" of equipment controlled by 6A008.l.3 or 6B008, or 6D003.a; or

(5) Exports or reexports to Rwanda.

* * * * *

■ 50. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and "Lasers," ECCN 6E002 is amended by revising the Heading and the TSR paragraphof the License Exceptions section to read as follows:

**6E002 "Technology" according to the General Technology Note for the "production" of equipment or materials controlled by 6A (except 6A991, 6A992, 6A994, 6A995, 6A996, 6A997 or 6A998), 6B (except 6B995) or 6C (except 6C992 or 6C994).**

* * * * *

**License Exceptions**

CIV: * * *

TSR: Yes, except for the following:

(1) Items controlled for MT reasons;

(2) "Technology" for commodities controlled by 6A002.e, 6A004.e, 6A008.j.1;

(3) Exports or reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of "technology" for the "production" of the following: (a) Items controlled by 6A001.a.1.b, 6A001.a.1.e, 6A001.a.2.a.1, 6A001.a.2.a.2, 6A001.a.2.a.3, 6A001.a.2.a.5, 6A001.a.2.a.6, 6A001.a.2.b, 6A002.a.3, 6A002.b, 6A002.c, 6A003.b.3, 6A003.b.4, 6A004.c, 6A004.d, 6A005.a.1, 6A006.a.2, 6A006.c.1, 6A006.d, 6A006.e, 6A006.g, 6A006.h, 6A008.d, 6A008.h, 6A008.k, 6A008.l.3, 6B008; and (b) Equipment controlled by 6A001.a.2.c and 6A001.a.2.f when specially designed for real time applications; or

(4) Exports or reexports to Rwanda.

* * * * *

■ 51. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6 Sensors and "Lasers", ECCN 6E003, List of Items Controlled section the Items paragraph is amended by revising paragraph .d.1, including adding a Technical Note, to read as follows:

**6E003 Other "technology" as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

d. * * *

d.1. Optical surface coating and treatment "technology", "required" to achieve an 'optical thickness' uniformity of 99.5% or better for optical coatings 500 mm or more in diameter or major axis length and with a total loss (absorption and scatter) of less than 5 x $10^{-3}$;

N.B.: See also 2E003.f.

**Technical Note:** 'Optical thickness' is the mathematical product of the index of refraction and the physical thickness of the coating.

* * * * *

■ 52. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7Navigation and Avionics, ECCN 7A001, List of Items Controlled section the Items paragraph is amended by:

■ a. Revising paragraph .a.2; and

■ b. Adding a new Note that appears after paragraph .a.3, to read as follows:

**7A001 Accelerometers as follows (see List of Items Controlled) and specially designed components therefor.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. * * *

a.2. Specified to function at linear acceleration levels exceeding 15 g but less than or equal to 100 g and having all of the following:

* * * * *

a.3. * * *

**Note:** 7A001.a.1 and 7A001.a.2 do not apply to accelerometers limited to measurement of only vibration or shock.

* * * * *

■ 53. Supplement No. 1 to Part 774 (the Commerce Control List), Category 7Navigation and Avionics, ECCN 7A002, List of Items Controlled section is amended by revising the Items paragraph to read as follows:

**7A002 Gyros or angular rate sensors, having any of the following (see List of Items Controlled) and specially designed components therefor.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. Specified to function at linear acceleration levels less than or equal to 100 g and having any of the following:

a.1. A rate range of less than 500 degrees per second and having any of the following:

a.1.a. A "bias" "stability" of less (better) than 0.5 degree per hour,when measured in a 1 g environment over a period of one month, and with respect to a fixed calibration value; *or*

a.1.b. An "angle random walk" of less (better) than or equal to 0.0035 degree per square root hour; *or*

**Note:** 7A002.a.1.b does not control 'spinning mass gyros'.

**Technical Note:** 'Spinning mass gyros' are gyros which use a continually rotating mass to sense angular motion.

a.2. A rate range greater than or equal to 500 degrees per second and having any of the following:

a.2.a. A "bias" "stability" of less (better) than 40 degrees per hour, when measured in a 1 g environment over a period of three minutes, and with respect to a fixed calibration value; *or*

a.2.b. An "angle random walk" of less (better) than or equal to 0.2 degree per square root hour; *or*

**Note:** 7A002.a.2.b does not apply to 'spinning mass gyros'.

b. Specified to function at linear acceleration levels exceeding 100 g.

■ 54. Supplement No. 1 to Part 774 (the Commerce Control List), Category 7Navigation and Avionics, ECCN 7A003, List of Items Controlled section the Items paragraph is amended by revising the introductory text of paragraph .d to read as follows:

**7A003 Inertial systems and specially designed components, as follows.**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

d. Inertial measurement equipment including Inertial Measurement Units (IMU) and Inertial Reference Systems (IRS), incorporating accelerometers or gyros controlled by 7A001 or 7A002.

* * * * *

■ 55. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 7Navigation and Avionics, ECCN 7E004, List of Items Controlled section the Items paragraph is amended by:

■ a. Revising paragraph .a.3 as set forth below; and

■ b. Removing and reserving paragraph .a.4.

**7E004 Other "technology" as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. * * *

a.3. Three dimensional displays for "aircraft";

* * * * *

■ 56. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 8—Marine, ECCN 8A001, List of Items Controlled section the Items paragraph is amended by revising paragraph .d.3 to read as follows:

**8A001 Submersible vehicles and surface vessels, as follows (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

d. * * *

d.3. Optical data or command link exceeding 1,000 m;

* * * * *

■ 57. Supplement No. 1 to Part 774 (the Commerce Control List), Category 8 Marine, ECCN 8A002 is amended by:

■ a. Revising the License Exceptions section;

■ b. Revising paragraphs .i.1, .o.3.b (including adding a Technical Note), .p, and .q in the Items paragraph of the List of Items Controlled section; and

■ c. Adding a new paragraph .r in the Items paragraph of the List of Items Controlled section, to read as follows:

**8A002 Marine systems, equipment and components, as follows (see List of Items Controlled).**

* * * * *

**License Exceptions**

LVS: * * *

GBS: Yes for 8A002.e.2 and manipulators for civil end-uses (*e.g.,* underwater oil, gas or mining operations) controlled by 8A002.i.2 and having 5 degrees of freedom of movement; and 8A002.r.

CIV: Yes for 8A002.e.2 and manipulators for civil end-uses (*e.g.,* underwater oil, gas or mining operations) controlled by 8A002.i.2 and having 5 degrees of freedom of movement; and 8A002.r.

**List of Items Controlled**

* * * * *

*Items:*

* * * * *

i. * * *

i.1. Systems which control the manipulator using information from sensors which measure any of the following:

i.1.a. Torque or force applied to an external object; *or*

i.1.b. Tactile sense between the manipulator and an external object; or

* * * * *

o. * * *

o.3. * * *

o.3.b. "Active noise reduction or cancellation systems" or magnetic bearings, specially designed for power transmission systems;

**Technical Note:** "Active noise reduction or cancellation systems" incorporate electronic control systems capable of actively reducing equipment vibration by the generation of anti-noise or anti-vibration signals directly to the source.

p. Pumpjet propulsion systems having all of the following:

p.1. Power output exceeding 2.5 MW; *and*

p.2. Using divergent nozzle and flow conditioning vane techniques to improve propulsive efficiency or reduce propulsion-generated underwater-radiated noise;

q. Underwater swimming and diving equipment as follows;

q.1. Closed circuit rebreathers;

q.2. Semi-closed circuit rebreathers;

**Note:** 8A002.q does not control individual rebreathers for personal use when accompanying their users.

r. Diver deterrent acoustic systems specially designed or modified to disrupt divers and having a sound pressure level equal to or exceeding 190 dB (reference 1 μPa at 1 m) at frequencies of 200 Hz and below.

**Note 1:** 8A002.r does not apply to diver deterrent systems based on under-water-explosive devices, air guns or combustible sources.

**Note 2:** 8A002.r includes diver deterrent acoustic systems that use spark gap sources,alsoknown as plasma sound sources.

■ 58. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9A001, List of Items Controlled section the Items paragraph is amended by revising the introductory text of paragraph .a to read as follows:

**9A001 Aero gas turbine engines having any of the following (see List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. Incorporating any of the technologies controlled by 9E003.a, 9E003.h, or 9E003.i; *or*

* * * * *

■ 59. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9A003 is amended by revising the Heading to read as follows:

■ 60.

**9A003 Specially designed assemblies and components, incorporating any of the "technologies" controlled by 9E003.a, 9E003.h or 9E003.i, for any of the following gas turbine engine propulsion systems (see List of Items Controlled).**

* * * * *

■ 61. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9A991 is amended by adding double quotes around the term "civil aircraft" in paragraph .b of the Items paragraph in the List of Items Controlled section.

■ 62. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9B001 is amended by adding double quotes around the term "tip shrouds" in the Heading.

■ 63. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9B002 is amended by revising the Heading and the Items paragraph of the List of Items Controlled section, to read as follows:

**9B002 On-line (real time) control systems, instrumentation (including sensors) or automated data acquisition and processing equipment, having all of the following (See List of Items Controlled).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. Specially designed for the "development" of gas turbine engines, assemblies or components; *and*

b. Incorporating "technologies" controlled by 9E003.h or 9E003.i.

■ 64. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9B008is amended by revising the Heading to read as follows:

**9B008 Direct measurement wall skin friction transducers specially designed to operate at a test flow total (stagnation) temperature exceeding 833 K (560° C).**

* * * * *

■ 65. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9D003 is amended by revising the Heading and the Items paragraph in the List of Items Controlled section to read as follows:

**9D003 "Software" incorporating "technology" specified by 9E003.h and used in "FADEC Systems" for propulsion systems controlled by 9A (except 9A018, 9A990 or 9A991) or equipment controlled by 9B (except 9B990 or 9B991).**

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

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

■ 66. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9D004, List of Items Controlled section the Items paragraph is amended by adding double quotes around the term "tip shrouds" in paragraph .f.

■ 67. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9E001 is amended by revising the License Requirement section to read as follows:

**9E001 "Technology" according to the General Technology Note for the "development" of equipment or "software", controlled by 9A001.b, 9A004 to 9A012, 9B (except 9B990 or 9B991), or 9D (except 9D990 or 9D991)**

**License Requirements**

*Reason for Control:* NS, MT, AT

| Control(s) | Country chart |
|---|---|
| NS applies to "technology" for items controlled by 9A001.b, 9A012, 9B001 to 9B010, 9D001 to 9D004 for NS reasons. | NS Column 1. |
| MT applies to "technology" for items controlled by 9B001, 9B002, 9B003, 9B004, 9B005, 9B007, 9B105, 9B106, 9B116, 9B117, 9D001, 9D002, 9D003, and 9D004 for MT reasons.. | MT Column 1. |
| AT applies to entire entry ..... | AT Column 1. |

License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

* * * * *

■ 68. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9Aerospace and Propulsion, ECCN 9E003 is amended by:

■ a. Revising the SI paragraph in the License Requirements section;

■ b. Adding double quotes around the term "tip shrouds" in paragraphs .a.1, .a.4, and .a.5 in the Items paragraph of the List of Items Controlled section;

■ c. Revising paragraph .a.8 (including adding a Technical Note) in the Items paragraph of the List of Items Controlled section, as set forth below;

■ d. Removing and reserving paragraph .a.10 and adding a Nota Bene (N.B.) in the Items paragraph of the List of Items Controlled section, as set forth below;

■ e. Redesignating paragraph .i as paragraph .j in the Items paragraph of the List of Items Controlled section; and

■ f. Adding a new paragraph .i in the Items paragraph of the List of Items Controlled section to read as follows:

**9E003 Other "technology" as follows (see List of Items Controlled).**

**License Requirements**

* * * * *

SI applies to 9E003.a.1 through a.8,.h, .i, and .j. See § 742.14 of the EAR for additional information.

* * * * *

**List of Items Controlled**

* * * * *

*Items:*

a. * * *

a.8. "Damage tolerant" gas turbine engine rotor components using powder metallurgy materials controlled by 1C002.b; *or*

**Technical Note:** "Damage tolerant"components are designed using methodology and substantiation to predict and limit crack growth.

* * * * *

a.10. [RESERVED]

N.B.: For adjustable flow path geometry, see 9E003.i.

* * * * *

i. "Technology" for adjustable flow path systems designed to maintain engine stability for gas generator turbines, fan or power turbines, or propelling nozzles, as follows:

i.1. "Development" "technology" for deriving the functional requirements for the components that maintain engine stability;

i.2. "Development" or "production" "technology" for components unique to the adjustable flow path system and that maintain engine stability;

i.3. "Development" "technology" for the control law algorithms, including "source code", unique to the adjustable flow path system and that maintain engine stability;

**Note:** 9E003.i does not apply to "development" or "production" "technology" for any of the following:

a. Inlet guide vanes;

b. Variable pitch fans or prop-fans;

c. Variable compressor vanes;

d. Compressor bleed valves; or

e. Adjustable flow path geometry for reverse thrust.

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■ 69. Supplement No. 3 to Part 774 (Statements of Understanding), adding a new statement of understanding to the end of the supplement to read as follows:

Supplement No. 3 to part 774—Statements of Understanding

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**Statement of Understanding—Used Goods**

The specifications in the Commerce Control List apply equally to new or used goods. In the case of used goods, an evaluation by the Bureau of Industry and Security may be carried out in order to assess whether the goods are capable of meeting the relevant specifications.

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**Kevin J. Wolf,**

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