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DEPARTMENT OF COMMERCE

Bureau of Industry and Security

15 CFR Parts 740, 770, and 774

[Docket No. 240221-0054**]**

RIN 0694–AJ38

Clarification of Controls on Radiation Hardened Integrated Circuits and expansion of License Exception GOV

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

ACTION: Interim Final rule.

SUMMARY: The Bureau of Industry and Security (BIS) is amending the Export Administration Regulations (EAR) to clarify controls on radiation hardened integrated circuits, including controls on computer and telecommunications equipment incorporating such radiation hardened integrated circuits. This rule also addresses certain scenarios that apply to certain integrated circuits acquired, tested, or otherwise used by or for the United States Government and affirms the availability of License Exception GOV for such items when pursuant to an official written request or directive from the Department of Defense or the Department of Energy. Lastly, this rule expands the availability of License Exception GOV for microelectronics items being exported, reexported, or transferred (in-country) in furtherance of a contract between the exporter, reexporter, or transferor and a department or agency of the U.S. Government when the contract provides for the export, reexport, transfer (in-country) of the item by the exporter, reexporter, or transferor in order to remove export control obstacles for official business of the U.S. Government, including the Department of Energy and the Department of Defense.

DATES: *Effective date*: This rule is effective **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

Comments due date: Comments must be received by BIS no later than [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

ADDRESSES: Comments on this rule may be submitted to the Federal rulemaking portal (www.regulations.gov). The regulations.gov ID for this rule is: BIS-2023-0038. Please refer to RIN 0694-AJ38 in all comments.

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

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

FOR FURTHER INFORMATION CONTACT: Brian Baker, Office of National Security and Technology Transfer Controls, Bureau of Industry and Security, Phone: (202) 482–9135; E-mail: Brian.Baker@bis.doc.gov

SUPPLEMENTARY INFORMATION:

Background

Department of Defense (DOD) Leadership established the Strategic Radiation Hardened Electronics Council (SRHEC) in September, 2018 with the goal of to ensuring continued access to Strategic Radiation Hardened (SRH) and Radiation Hardened (RH) electronics and the long-term viability of the domestic infrastructure that are critical to the Nation's security and defense. In support of that effort, the Bureau of Industry and Security (BIS) is amending the Export Administration Regulations (EAR, 15 CFR parts 730-774) to clarify the scope of controls on radiation hardened integrated circuits, including controls on computer and telecommunications equipment incorporating such radiation hardened integrated circuits. Additionally, this rule addresses certain scenarios that apply to certain integrated circuits acquired, tested, or otherwise used by or for the United States Government and affirms the availability of License Exception GOV (15 CFR 740.11) for such items when exported, reexported, or transferred (in-country) pursuant to an official written request or directive from the Department of Defense or the Department of Energy. This rule also expands the availability of License Exception GOV for microelectronics items being exported, reexported, or transferred (in-country) in furtherance of a contract between the exporter, reexporter, and transferor and a department or agency of the U.S. Government (USG) when the contract provides for the export, reexport, or transfer (in-country) of the item by the exporter, reexporter, or transferor. This change will remove the obstacle of obtaining export authorization that currently hinders contract performance work in producing microelectronics items subject to the EAR by, for or at the direction of USG, where some exports, reexports or transfers (in-country) between onshore and offshore "development" or "production" partners may transpire.

§ 740.11 License Exception GOV

This rule revises paragraph (b)(1) by adding the phrase "for or at the direction of" and adding "or the Department of Energy," to the first sentence.

This rule also revises paragraph (b)(2)(iv) by adding "or the Department of Energy" to the heading of paragraph (b)(2)(iv) and "or the Department of Energy" to the same paragraph.

Also, for clarification this rule adds "department or" in front of "agency of the U.S. Government. BIS was made aware that the authorization provided in paragraph (b)(2)(iv) (*i.e.*, authorization to export, reexport or transfer (in country) items subject to the EAR pursuant to an official request or directive issued by DOD) is also needed by the Department of Energy (DOE) in order to ensure the continued availability, access and assurance of the strategic radiation hardened electronics that are critical to the nation's security and defense; therefore BIS is ensuring that authorization is available to DOE by making the revisions described.

BIS is also adding paragraph (b)(2)(vii), to authorize the export, reexport, or transfer (in-country) of microelectronics items in furtherance of a contract between the exporter, reexporter, or transferor and a department or agency of the USG, if the contract provides for such export, reexport, or transfer (in-country) of the microelectronics item by the exporter, reexporter, or transferor. This ensures the continued availability, access, and assurance of the strategic microelectronics that are critical to the nation's security and defense.

§ 770.2 Item interpretations

This rule revises § 770.2 to add paragraph (o) *Interpretation 15: Certain integrated circuits acquired, tested, or otherwise used by or for the United States Government*. This new paragraph provides the public with guidance about the classification of integrated circuits (IC) on the Commerce Control List (CCL) of supplement no. 1 to part 774 of the EAR when there is USG involvement in the fabrication of the IC, such as testing or modification requests. BIS is also adding two example scenarios to help the public understand the provisions of this new paragraph.

Supplement no. 1 to part 774 – Commerce Control List

This rule revises Export Control Classification Numbers (ECCNs) 4A001, 4A101, 5A001, 6A203, and 6A999 on the CCL to add a note to the Related Controls paragraph of each of these ECCNs to explain that the act of incorporating a radiation hardened integrated circuit into commodities specified under other ECCNs on the CCL or designated as EAR99 does not, in

and of itself, cause the commodity into which the radiation hardened integrated circuit is incorporated to meet the radiation hardened specifications of ECCNs 4A001.a.2, 4A101.b, 5A001.a.2, 6A203.d, or 6A999.b. For example, the incorporation of a radiation hardened integrated circuit classified under ECCN 3A001.a.1 into a computer classified under ECCN 4A994 does not, in and of itself, change the classification of the computer to ECCN 4A001.a.2.

Export Control Reform Act of 2018

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

Rulemaking Requirements

1. This interim final rule has been designated a "significant regulatory action" under Executive Order 12866.

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

This rule involves the following OMB-approved collections of information subject to the PRA:

- 0694-0088, "Multi-Purpose Application," which carries a burden hour estimate of 29.4 minutes for a manual or electronic submission;
- 0694-0096 "Five Year Records Retention Period," which carries a burden hour estimate of less than 1 minute;
- 0694-0122, "Licensing Responsibilities and Enforcement;" and
- 0607-0152 "Automated Export System (AES) Program," which carries a burden hour estimate of 3 minutes per electronic submission.

BIS expects the burden hours associated with these collections to remain the same, because the revisions in this rule are intended to preempt future licensing delays and volume to USG programs and their industry / DIB contract performers, rather than address current license application burden. Additional information regarding these collections of information – including all background materials -- can be found at https:/www.reginfo.gov/public/do/PRAMain by using the search function to enter either the title of the collection or the OMB Control Number.

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

4. Pursuant to section 1762 of ECRA (50 U.S.C. 4821), this action is exempt from the Administrative Procedure Act (APA) (5 U.S.C. 553) requirements for notice of proposed rulemaking, opportunity for public participation, and delay in effective date. While section 1762 of ECRA provides sufficient authority for such an exemption, this action is also independently exempt from these APA requirements because it involves a military or foreign affairs function of the United States (5 U.S.C. 553(a)(1)).

5. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule by 5 U.S.C. 553, or by any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601, et seq., are not applicable. Accordingly, no regulatory flexibility analysis is required, and none has been prepared.

List of Subjects

15 CFR Part 740

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

15 CFR Part 770

Exports.

15 CFR Part 774

Exports, Reporting and recordkeeping requirements.

For the reasons stated in the preamble, parts 740, 770, and 774 of the Export Administration Regulations (15 CFR parts 730 through 774) are amended as follows:

PART 740 – LICENSE EXCEPTIONS

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

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

2. Section 740.11 is amended by revising paragraphs (b)(1) and (b)(2)(iv), and adding paragraph (b)(2)(vii), to read as follows:

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

* * * * *

(b) ***

(1) *Scope*. The provisions of this paragraph (b) authorize exports, reexports, and transfers (in-country) to personnel and agencies of the U.S. Government and certain exports by, for or at the direction of the Department of Defense or the Department of Energy. "Agency of the U.S. Government" includes all civilian and military departments, branches, missions, government-owned corporations, and other agencies of the U.S. Government but does not include such national agencies as the American Red Cross or international organizations in which the United States participates such as the Organization of American States. Therefore, shipments may not be made to these non-governmental national or international agencies, except as provided in paragraph (b)(2)(i) of this section for U.S. representatives to these organizations.

* * * * *

(2) * * *

(iv) *Items exported at the direction of the U.S. Department of Defense or the Department of Energy.* This paragraph authorizes items to be exported, reexported, or transferred (in-country) pursuant to an official written request or directive from a department or agency of the U.S. Department of Defense or the Department of Energy.

* * * * *

(vii) This paragraph authorizes the export, reexport, or transfer (in-country) of microelectronics items in furtherance of a contract between the exporter, reexporter, or transferor and a department or agency of the U.S. Government, if the contract provides for such export, reexport, or transfer (in-country) of the microelectronics item by the exporter, reexporter, or transferor.

PART 770 – INTERPRETATIONS

3. The authority citation for part 770 continues to read as follows:

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

4. Section 770.2 is amended by adding paragraph (o) to read as follows:

§ 770.2 Item interpretations.

* * * * *

(o) *Interpretation 15: Certain integrated circuits acquired, tested, or otherwise used by or for the United States Government*--(1) *Classification of the integrated circuit (IC).* Integrated circuits (ICs), including packaged "electronic assemblies" of ICs described by this section, that are manufactured using existing commercial fabrication process technologies and which are acquired, tested, or otherwise used by, for, or under contract with the United States Government (USG), are not considered to be radiation hardened (*e.g.*, designed to withstand a specified radiation dose or upset) or temperature rated (*e.g.*, rated to operate at prescribed temperatures) as may otherwise be specified under an Export Control Classification Number (ECCN) on the Commerce Control List (CCL) in supplement no. 1 to part 774 of the EAR, provided all of the following apply:

(i) During "development", the IC is not designed, rated, or certified (except by or for the USG) to meet the radiation or temperature specifications of any ECCN; and

(ii) All commercial testing (including by the manufacturer during fabrication, sort, packaging or assembly) regarding radiation or temperature is limited to standard commercial tools and techniques, or else by means funded or furnished by the USG for their use in the commercial setting for these specified ICs.

(2) *Activities that do not change the classification of "software" or "technology" for the commercial fabrication of ICs.* The "development", "production," or subsequent use of the ICs described by this section does not change the classification of any underlying standard commercial process "software" or "technology" used to manufacture or test these ICs, provided all of the following apply:

(i) Any utilized existing commercial "software" or "technology" specified under ECCNs 3D991, 3E991, 3E001, 9D515.d, 9D515.e, 9E515.d or 9E515.e does not meet the "required" standard (as defined in part 772 of the EAR) of any other ECCN on the CCL; and

Note 1 to paragraph (o)(2)(i): The use of existing commercial "software" or "technology" by or for the USG for the purposes described in paragraph (o)(1) of this section does not, in and of itself, establish the "required" standard to meet the specifications of any ECCN on the CCL.

(ii) The functional capability of the hardware, "software," or "technology" existing within the standard commercial fabrication process has not been modified (*e.g.*, by addition of special process steps or unique interpretation of design data), except as may be required or requested by the USG (*e.g.*, as a stipulation of contract performance) where all of the following apply:

(A) The modifications do not change the ECCN of any item subject to the EAR (except to a less restrictive classification, *e.g.*, from an ECCN on the CCL to EAR99); and

(B) The modifications are limited to the manufacture or testing of ICs by or for the USG as specified in paragraph (o)(1) of this section.

(3) *Examples*. Scenarios addressed by this section include the following:

(i) If a commercially fabricated IC specified under ECCN 3A991 is tested by the USG (or by a person or entity in a contractual relationship with the USG) and meets the radiation-hardened parameters in ECCN 3A001.a.1, the classification of the IC does not change from ECCN 3A991 and the classifications of the underlying standard process "technology", "equipment" and "software" do not change from their original ECCNs.

(ii) If a standard commercial process for fabricating ICs includes certain "technology" specified under ECCN 3E001 (*e.g.*, for ICs specified under ECCN 3A001.a.1), or ECCN 9E515 (*e.g.*, for discrete electronic components specified under ECCNs 9A515.d or .e) and those process "technologies" are used to manufacture ICs and discrete electronic components for the U.S. Government, only the portion of the "technology" that is "required" meets the specifications under ECCN 3E001 or 9E515. Moreover, the use of these standard commercial processes does not presumptively result in the control of the resulting U.S. Government ICs under ECCN paragraphs 3A001.a.1 or 9A515.d or .e; instead, the ECCNs of the U.S. Government ICs subject to the EAR would be determined according to paragraph (o)(1) of this section.

(iii) If a standard commercial IC fabrication process at a particular foundry is comprised of tools specified under ECCNs 3B001 or 3B991 or as EAR99, and where the "technology" is limited to "technology" specified under ECCN 3E991 or as EAR99, and that foundry (which typically produces ICs specified under ECCN 3A991 or as EAR99) were to deviate from its standard fabrication process (*e.g.*, by adding special process steps or design features) to produce a family of ICs designed to meet or exceed the radiation hardened parameters in ECCN paragraphs 3A001.a.1 or 9A515.d. or .e and intended for sale to U.S. and non-U.S. commercial and government customers, then the ECCN of the additional process "technology" that is "required" for producing those specific radiation hardened ICs would need to be separately evaluated and determined (*e.g.*, under ECCNs 3E001 and 9E515, as applicable).

PART 774 - THE COMMERCE CONTROL LIST

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

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

6. Supplement no. 1 to part 774 is amended by revising ECCNs 4A001, 4A101, 5A001, 6A203, and 6A999, to read as follows:

SUPPLEMENT NO. 1 TO PART 774 – THE COMMERCE CONTROL LIST

* * * * *

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

License Requirements

Reason for Control: NS, MT, AT, NP

Control(s)	Country Chart (See Supp. No. 1 to part 738)
NS applies to entire entry	NS Column 2
MT applies to items in 4A001.a when the parameters in 4A101 are met or exceeded	MT Column 1
AT applies to entire entry	AT Column 1
NP applies, unless a License Exception is available. See §742.3(b) of the EAR for information on applicable licensing review policies.	N/A

Reporting Requirements

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

List Based License Exceptions (See Part 740 for a description of all license exceptions)

LVS: $5000 for 4A001.a; N/A for MT.

GBS: N/A

Special Conditions for STA

STA: License Exception STA may not be used to ship any commodity in 4A001.a.2 to any of the destinations listed in Country Group A:6 (See Supplement No.1 to part 740 of the EAR).

List of Items Controlled

Related Controls: (1) See also 4A101 and 4A994. Equipment designed or rated for transient ionizing radiation is "subject to the ITAR" (see 22 CFR parts 120 through 130). (2) The act of incorporating a radiation hardened integrated circuit into a computer that is specified under ECCN 4A994 or designated as EAR99 does not, in and of itself, cause the computer to meet the parameters of ECCN paragraph 4A001.a.2.

Related Definitions: For the purposes of integrated circuits in 4A001.a.2, 5×10^3 Gy(Si) = 5×10^5 Rads (Si); 5×10^6 Gy (Si)/s = 5×10^8 Rads (Si)/s.

Items:

a. "Specially designed" to have any of the following:

a.1. [Reserved]

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

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

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

a.2.c. Single Event Upset of 1×10^{-8} Error/bit/day;

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

applications.

b. [Reserved]

* * * * *

4A101 Analog computers, "digital computers" or digital differential analyzers, other than those controlled by 4A001 designed or modified for use in "missiles", having any of the following (see List of Items Controlled).

License Requirements

Reason for Control: MT, AT

Control(s)	Country Chart (See Supp. No. 1 to part 738)
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

List Based License Exceptions (See Part 740 for a description of all license exceptions)

LVS: N/A

GBS: N/A

List of Items Controlled

Related Controls: The act of incorporating a radiation hardened integrated circuit into a computer that is specified under ECCN 4A994 or designated as EAR99 does not, in and of itself, cause the computer to meet the parameters of ECCN paragraph 4A101.b.

Related Definitions: N/A

Items:

a. Rated for continuous operation at temperatures from below 228 K (-45° C) to above 328 K (+55°C); *or*

b. Designed as ruggedized or 'radiation hardened'.

Note: *For the purposes of 4A101, 'radiation hardened' means that the "part," "component" or equipment is designed or rated to withstand radiation levels which meet or exceed a total irradiation dose of 5 X 10^5 rads (Si).*

* * * * *

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

License Requirements

Reason for Control: NS, SL, AT

Control(s)	Country Chart (See Supp. No.1 to part 738)
NS applies to 5A001.a, b.5, .e, .f.3 and .h	NS Column 1
NS applies to 5A001.b (except .b.5), .c, .d, .f (except f.3), .g, and .j.	NS Column 2
SL applies to 5A001.f.1	A license is required for all destinations, as specified in §742.13 of the EAR. Accordingly, a column specific to this control does not appear on the Commerce Country Chart (Supplement No. 1 to Part 738 of the EAR). ***Note to SL paragraph:*** *This licensing requirement does not supersede, nor does it implement, construe or limit the scope of any criminal statute, including, but not limited to the Omnibus Safe Streets Act of 1968, as amended.*

AT applies to entire entry	AT Column 1

Reporting Requirements

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

List Based License Exceptions (See Part 740 for a description of all license exceptions)

LVS: N/A for 5A001.a, b.5, .e, f.3 and .h;

$5000 for 5A001.b.1, .b.2, .b.3, .b.6, .d, f.2, f.4, and .g;

$3000 for 5A001.c.

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

ACE: Yes for 5A001.j, except to Country Group E:1 or E:2. See §740.22 of the EAR for eligibility criteria

Special Conditions for STA

STA: License Exception STA may not be used to ship any commodity in 5A001.j to any of the destinations listed in Country Group A:5 or A:6 (See Supplement No. 1 to part 740 of the EAR), or any commodity in 5A001.b.3, .b.5 or .h to any of the destinations listed in Country Group A:6 (See Supplement No.1 to part 740 of the EAR).

List of Items Controlled

Related Controls: (1) See USML Category XI for controls on direction-finding "equipment" including types of "equipment" in ECCN 5A001.e and any other military or intelligence electronic "equipment" that is "subject to the ITAR." (2) See USML Category XI(a)(4)(iii) for controls on electronic attack and jamming "equipment" defined in 5A001.f and .h that are subject to the ITAR. (3) The act of incorporating a radiation hardened integrated circuit into telecommunications equipment that is specified under ECCN 5A991 or designated as EAR99 does not, in and of itself, cause the telecommunications equipment to meet the specifications of ECCN paragraph 5A001.a.2. (4) See also ECCNs 5A101, 5A980, and 5A991.

a. Any type of telecommunications equipment having any of the following characteristics, functions or features:

a.1. “Specially designed” to withstand transitory electronic effects or electromagnetic pulse effects, both arising from a nuclear explosion;

a.2. Specially hardened to withstand gamma, neutron or ion radiation;

a.3. “Specially designed” to operate below 218 K (-55°C); *or*

a.4. “Specially designed” to operate above 397 K (124° C);

***Note**: 5A001.a.3 and 5A001.a.4 apply only to electronic equipment.*

b. Telecommunication systems and equipment, and “specially designed” “components” and “accessories” therefor, having any of the following characteristics, functions or features:

b.1 Being underwater untethered communications systems having any of the following:

b.1.a. An acoustic carrier frequency outside the range from 20 kHz to 60 kHz;

b.1.b. Using an electromagnetic carrier frequency below 30 kHz; *or*

b.1.c. Using electronic beam steering techniques; *or*

b.1.d. Using “lasers” or light-emitting diodes (LEDs), with an output wavelength greater than 400 nm and less than 700 nm, in a “local area network”;

b.2. Being radio equipment operating in the 1.5 MHz to 87.5 MHz band and having all of the following:

b.2.a.. Automatically predicting and selecting frequencies and “total digital transfer rates” per channel to optimize the transmission; *and*

b.2.b. Incorporating a linear power amplifier configuration having a capability to support multiple signals simultaneously at an output power of 1 kW or more in the frequency range of 1.5 MHz or more but less than 30 MHz, or 250 W or more in the frequency range of 30 MHz or more but not exceeding 87.5 MHz, over an “instantaneous bandwidth” of one octave or more and with an output harmonic and distortion content of better than -80 dB;

b.3. Being radio equipment employing “spread spectrum” techniques, including “frequency hopping” techniques, not controlled in 5A001.b.4 and having any of the following:

b.3.a. User programmable spreading codes; *or*

b.3.b. A total transmitted bandwidth which is 100 or more times the bandwidth of any one information channel and in excess of 50 kHz;

Note: *5A001.b.3.b does not control radio equipment “specially designed” for use with any of the following:*

a. Civil cellular radio-communications systems; or

b. Fixed or mobile satellite Earth stations for commercial civil telecommunications.

Note: *5A001.b.3 does not control equipment operating at an output power of 1 W or less.*

b.4. Being radio equipment employing ultra-wideband modulation techniques, having user programmable channelizing codes, scrambling codes, or network identification codes and having any of the following:

b.4.a. A bandwidth exceeding 500 MHz; *or*

b.4.b. A “fractional bandwidth” of 20% or more;

b.5. Being digitally controlled radio receivers having all of the following:

b.5.a. More than 1,000 channels;

b.5.b. A ‘channel switching time ’ of less than 1 ms;

b.5.c. Automatic searching or scanning of a part of the electromagnetic spectrum; *and*

b.5.d. Identification of the received signals or the type of transmitter; *or*

Note: *5A001.b.5 does not control radio equipment “specially designed” for use with civil cellular radio-communications systems.*

Technical Note: *For the purposes of 5A001.b.5.b, ‘channel switching time’ means the time (i.e., delay) to change from one receiving frequency to another, to arrive at or within ±0.05% of the final specified receiving frequency. Items having a specified frequency range of less than ±0.05% around their center frequency are defined to be incapable of channel frequency switching.*

b.6. Employing functions of digital “signal processing” to provide 'voice coding' output at rates of less than 700 bit/s.

Technical Notes:

1. For variable rate 'voice coding', 5A001.b.6 applies to the 'voice coding' output of continuous speech.

2. For the purposes of 5A001.b.6, ‘voice coding’ is defined as the technique to take samples of human voice and then convert these samples of human voice into a digital signal taking into account specific characteristics of human speech.

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 2×10^9 N/m^2 or more;

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

***Technical Note:** For the purposes of 5A001.c, ‘proof test’ is the 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 (20ºC) and relative humidity 40%. Equivalent national standards may be used for executing the proof test.*

d. “Electronically steerable phased array antennae” as follows:

d.1. Rated for operation above 31.8 GHz, but not exceeding 57 GHz, and having an Effective Radiated Power (ERP) equal to or greater than +20 dBm (22.15 dBm Effective Isotropic Radiated Power (EIRP));

d.2. Rated for operation above 57 GHz, but not exceeding 66 GHz, and having an ERP equal to or greater than +24 dBm (26.15 dBm EIRP);

d.3. Rated for operation above 66 GHz, but not exceeding 90 GHz, and having an ERP equal to or greater than +20 dBm (22.15 dBm EIRP);

d.4. Rated for operation above 90 GHz;

Note 1: *5A001.d does not control 'electronically steerable phased array antennae' for landing systems with instruments meeting ICAO standards covering Microwave Landing Systems (MLS).*

Note 2*:* *5A001.d does not apply to antennae "specially designed" for any of the following:*

a. Civil cellular or WLAN radio-communications systems;

b. IEEE 802.15 or wireless HDMI; or

c. Fixed or mobile satellite earth stations for commercial civil telecommunications.

Technical Note: *For the purposes of 5A001.d, 'electronically steerable phased array antenna' is an antenna which forms a beam by means of phase coupling, (i.e., the beam direction is controlled by the complex excitation coefficients of the radiating elements) and the direction of that beam can be varied (both in transmission and reception) in azimuth or in elevation, or both, by application of an electrical signal.*

e. Radio direction finding equipment operating at frequencies above 30 MHz and having all of the following, and "specially designed" "components" therefor:

e.1. "Instantaneous bandwidth" of 10 MHz or more; and

e.2. Capable of finding a Line Of Bearing (LOB) to non-cooperating radio transmitters with a signal duration of less than 1 ms;

f. Mobile telecommunications interception or jamming equipment, and monitoring equipment therefor, as follows, and "specially designed" "components" therefor:

f.1. Interception equipment designed for the extraction of voice or data, transmitted over the air interface;

f.2. Interception equipment not specified in 5A001.f.1, designed for the extraction of client device or subscriber identifiers (e.g., IMSI, TIMSI or IMEI), signaling, or other metadata transmitted over the air interface;

f.3. Jamming equipment "specially designed" or modified to intentionally and selectively interfere with, deny, inhibit, degrade or seduce mobile telecommunication services and performing any of the following:

f.3.a. Simulate the functions of Radio Access Network (RAN) equipment;

f.3.b. Detect and exploit specific characteristics of the mobile telecommunications protocol employed (e.g., GSM); *or*

f.3.c. Exploit specific characteristics of the mobile telecommunications protocol employed (e.g., GSM);

f.4. Radio Frequency (RF) monitoring equipment designed or modified to identify the operation of items specified in 5A001.f.1, 5A001.f.2 or 5A001.f.3.

Note: *5A001.f.1 and 5A001.f.2 do not apply to any of the following:*

a. Equipment "specially designed" for the interception of analog Private Mobile Radio (PMR), IEEE 802.11 WLAN;

b. Equipment designed for mobile telecommunications network operators; or

c. Equipment designed for the "development" or "production" of mobile telecommunications equipment or systems.

N.B. 1: *See also the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120-130). For items specified by 5A001.f.1 (including as previously specified by 5A001.i), see also 5A980 and the U.S. Munitions List (22 CFR part 121).*

N.B. 2*: For radio receivers see 5A001.b.5.*

g. Passive Coherent Location (PCL) systems or equipment, "specially designed" for detecting and tracking moving objects by measuring reflections of ambient radio frequency emissions, supplied by non-radar transmitters.

Technical Note: *For the purposes of 5A001.g, non-radar transmitters may include commercial radio, television or cellular telecommunications base stations.*

Note: *5A001.g. does not control:*

a. Radio-astronomical equipment; or

b. Systems or equipment, that require any radio transmission from the target.

h. Counter Improvised Explosive Device (IED) equipment and related equipment, as follows:

h.1. Radio Frequency (RF) transmitting equipment, not specified by 5A001.f, designed or modified for prematurely activating or preventing the initiation of Improvised Explosive Devices (IEDs);

h.2. Equipment using techniques designed to enable radio communications in the same frequency channels on which co-located equipment specified by 5A001.h.1 is transmitting.

N.B.: *See also Category XI of the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120-130).*

i. [Reserved]

N.B.: *See 5A001.f.1 for items previously specified by 5A001.i.*

j. IP network communications surveillance systems or equipment, and "specially designed" components therefor, having all of the following:

j.1. Performing all of the following on a carrier class IP network (*e.g.*, national grade IP backbone):

j.1.a. Analysis at the application layer (*e.g.,* Layer 7 of Open Systems Interconnection (OSI) model (ISO/IEC 7498-1));

j.1.b. Extraction of selected metadata and application content (*e.g.*, voice, video, messages, attachments); *and*

j.1.c. Indexing of extracted data; *and*

j.2. Being "specially designed" to carry out all of the following:

j.2.a. Execution of searches on the basis of "hard selectors"; *and*

j.2.b. Mapping of the relational network of an individual or of a group of people.

Note*: 5A001.j does not apply to "systems" or "equipment", "specially designed" for any of the following:*

a. Marketing purpose;

b. Network Quality of Service (QoS); or

c. Quality of Experience (QoE).

N.B.: *See also the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120-130). Defense articles described in USML Category XI(b) are "subject to the ITAR."*

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6A203 High-speed cameras, imaging devices and "components" therefor, other than those controlled by 6A003 (see List of Items Controlled).

License Requirements

Reason for Control: NP, AT

Control(s)	*Country Chart (See Supp. No. 1 to part 738)*
NP applies to entire entry	NP Column 1
AT applies to entire entry	AT Column 1

List Based License Exceptions (See Part 740 for a description of all license exceptions)

LVS: N/A

GBS: N/A

List of Items Controlled

Related Controls: (1) See ECCNs 6E001 ("development"), 6E002 ("production"), and 6E201 ("use") for technology for items controlled under this entry. (2) Also see ECCN 6A003.a.3 and a.4. (3) The act of incorporating a radiation hardened integrated circuit into a TV camera designated as EAR99 does not, in and of itself, cause the TV camera to meet the parameters of ECCN paragraph 6A203.d.

Related Definitions: N/A

Items:

a. Streak cameras and "specially designed" components therefor, as follows:

a.1. Streak cameras with writing speeds greater than 0.5 mm/µs;

a.2. Electronic streak cameras capable of 50 ns or less time resolution;

a.3. Streak tubes for cameras described in 6A203.a.2;

a.4. Plug-ins, "specially designed" for use with streak cameras having modular structures, that enable the performance characteristics described in 6A203.a.1 or .a.2;

a.5. Synchronizing electronics units, and rotor assemblies consisting of turbines, mirrors and bearings, that are "specially designed" for cameras described in 6A203.a.1.

b. Framing cameras and "specially designed" components therefor, as follows:

b.1. Framing cameras with recording rates greater than 225,000 frames per second;

b.2. Framing cameras capable of 50 ns or less frame exposure time;

b.3. Framing tubes, and solid-state imaging devices, that have a fast image gating (shutter) time of 50 ns or less and are "specially designed" for cameras described in 6A203.b.1 or .b.2;

b.4. Plug-ins, "specially designed" for use with framing cameras having modular structures, that enable the performance characteristics described in 6A203.b.1 or .b.2;

b.5. Synchronizing electronic units, and rotor assemblies consisting of turbines, mirrors and bearings, that are "specially designed" for cameras described in 6A203.b.1 or .b.2.

c. Solid-state or electron tube cameras and "specially designed" components therefor, as follows:

c.1. Solid-state cameras, or electron tube cameras, with a fast image gating (shutter) time of 50 ns or less;

c.2. Solid-state imaging devices, and image intensifiers tubes, that have a fast image gating (shutter) time of 50 ns or less and are "specially designed" for cameras described in 6A203.c.1;

c.3. Electro-optical shuttering devices (Kerr or Pockels cells) with a fast image gating (shutter) time of 50 ns or less;

c.4. Plug-ins, "specially designed" for use with cameras having modular structures, that enable the performance characteristics described in 6A203.c.1.

Technical Note: *High speed single frame cameras can be used alone to produce a single image of a dynamic event, or several such cameras can be combined in a sequentially-triggered system to produce multiple images of an event.*

d. Radiation-hardened TV cameras, or lenses therefor, "specially designed" or rated as radiation hardened to withstand a total radiation dose greater than 5×10^4 Gy (silicon) without operational degradation.

Technical Note: *The term Gy (silicon) refers to the energy in Joules per kilogram absorbed by an unshielded silicon sample when exposed to ionizing radiation*.

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6A999 Specific processing equipment, as follows (see List of Items Controlled).

License Requirements

Reason for Control: RS AT

Control(s)	Country Chart (See Supp. No. 1 to part 738)
RS applies to 6A999.c	RS Column 2

AT applies to entire entry	A license is required for items controlled by this entry to North Korea for anti-terrorism reasons. The Commerce Country Chart is not designed to determine AT licensing requirements for this entry. See §742.19 of the EAR for additional information.

List Based License Exceptions (See Part 740 for a description of all license exceptions)

LVS: N/A

GBS: N/A

List of Items Controlled

Related Controls: (1) The act of incorporating a radiation hardened integrated circuit into a TV camera designated as EAR99 does not, in and of itself, cause the TV camera to meet the specifications of ECCN paragraph 6A999.b. (2) See also 6A203.

Related Definitions: N/A

Items:

a. Seismic detection equipment not controlled in paragraph c.

b. Radiation hardened TV cameras, n.e.s.

c. Seismic intrusion detection systems that detect, classify and determine the bearing on the source of a detected signal.

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Thea D. Rozman Kendler,

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