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Wassenaar Arrangement 2012 Plenary Agreements Implementation: Commerce Control List, Definitions, and Reports; Final Rule

DEPARTMENT OF COMMERCE

Bureau of Industry and Security

15 CFR Parts 738, 740, 742, 743, 746, 752, 770, 772, and 774

[Docket No. 121207691–3383–02]

RIN 0694–AF83

Wassenaar Arrangement 2012 Plenary Agreements Implementation: Commerce Control List, Definitions, and Reports

AGENCY: Bureau of Industry and Security, Commerce.

ACTION: Final rule.

SUMMARY: The Bureau of Industry and Security (BIS) maintains, as part of its Export Administration Regulations (EAR), the Commerce Control List (CCL), which identifies certain of the items subject to Department of Commerce jurisdiction. 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 2012 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. This rule harmonizes the CCL with the changes made to the WA List at the Plenary by revising ECCNs controlled for national security reasons in each category of the CCL, except category 8, as well as amending the General Software Note, WA reporting requirements, and definitions section in the EAR. BIS is adding unilateral controls to the CCL for specific software and technology for aviation control systems, which the WA agreements removed from the WA List, i.e., EAR national security controls.

DATES: This rule is effective: June 20, 2013.

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SUPPLEMENTARY INFORMATION:

Background

The Wassenaar Arrangement (WA) on Export Controls for Conventional Arms and Dual-Use Goods and Technologies is a group of 41 like-minded states committed to promoting responsibility and transparency in the global arms trade, and preventing destabilizing accumulations of arms. As a Participating State, the United States has committed to controlling for export all items on the WA control lists. The lists were first established in 1996 and have been revised annually thereafter. Proposals for changes to the WA control lists that achieve consensus are approved by Participating States at annual December Plenary meetings. Participating States are charged with implementing the agreed list changes as soon as possible after approval. Implementation of WA list changes ensures U.S. companies have a level playing field with their competitors in other WA member states.

Revisions to the Commerce Control List

Out of the 37 Export Control Classification Numbers (ECCNs) included in this rule, the following 28 ECCNs on the Commerce Control List (CCL) are revised to implement the changes to the Wassenaar List of Dual-Use Goods and Technologies agreed to at the December 2012 WA Plenary meeting: ECCNs 1A004, 1C001, 2B001, 2B006, 2D001, 2D002, 3A001, 3A002, 3B001, 3C002, 4D001, 5A001, 5B001, 5E001, 5A002, 5E002, 6A001, 6A002, 6A005, 6C004, 6C005, 7A001, 7D003, 7E001, 7E004, 9A001, 9A018 and 9E003; and the following two (2) ECCNs, 2D003 and 7D004, are added to the CCL to implement the changes to the Wassenaar List of Dual-Use Goods and Technologies agreed to at the December 2012 WA Plenary meeting.

Corresponding changes related to the movement of 5A001.i to 5A001.f.1 are made to ECCNs 5A980, 5D001, 5D980, 5E001and 5E980.

This rule also makes additions to 0D521 and 0E521 for ''source code'' for the ''development'' of fly-by-wire control systems and ''technology'' for fly-by-wire control systems, see 7D004 for explanation.

Category 1 Special Materials and Related Equipment, Chemicals, ''Microorganisms,'' and ''Toxins''

1A004 (Protective and Detection Equipment and Components)

In the introductory paragraph .a of the Items paragraph in the List of Items Controlled section, ''Gas masks'' is replaced by ''Full face masks'' and a Technical Note is added to explain that ''for the purpose of 1A004.a, full face masks are also known as gas masks.'' The masks controlled in 1A004.a protect against more than just gases and the term gas masks has been replaced by full face masks in manufacture data sheets. This change in terminology does not change the scope of the control.

In the Note at the end of the Items paragraph in the List of Items Controlled section, paragraph .b is amended by replacing ''Equipment'' with ''Occupational health or safety equipment'' to clarify the scope of the exclusion Note.

1C001 (Materials Specially Designed for Use as Absorbers of Electromagnetic Waves, or Intrinsically Conductive Polymers)

Paragraph 1C001.b (Piezoelectric polymers and copolymers) of the Items paragraph in the List of Items Controlled section is amended by adding an exclusion Note for materials, specially designed or formulated for laser marking of polymers; or laser welding of polymers, because these materials are not used in military applications.

Paragraph 1C001.c (Seals, gaskets, valve seats, bladders or diaphragms) of the Items paragraph in the List of Items Controlled section is amended by adding an exclusion Note for 1C001.c materials in liquid form, because the liquid form is not used in military applications but is used in commercial applications to make a transparent conductive layer. It is also used, for example, in the liquid crystal panel of televisions, personal computers, and other such commercial commodities.

Category 2—Materials Processing

2B001 (Machine Tools)

The Header is amended to remove the phrase ''and specially designed components'' to harmonize with the changes to 2B001.f.

The Unit paragraph of the List of Items Controlled section is amended by removing the phrase ''components in $ value'' to harmonize with the changes in 2B001.f. Amendments to the Items

paragraph of the List of Items controlled section in 2B001 are as follows.

The exclusion Note 2 to 2B001 is amended by correcting the spelling of jewelry in paragraph .d and adding paragraph .e for dental prostheses.

2B001.a (Machine tools for turning) is amended by revising the positioning accuracy in 2B001.a.1 from 4.5 µm to 3.0 µm and moving the phrase ''according to ISO 230/2 (2006)'' within that paragraph, and adding the phrase ''or national equivalents'' to harmonize with WA agreed text.

2B001.b (Machine tools for milling) is amended by revising the positioning accuracy in 2B001.b.1.a from 4.5 µm to 3.0 µm and moving the phrase ''according to ISO 230/2 (2006)'' within that paragraph, and adding the phrase ''or national equivalents'' to harmonize with WA agreed text.

2B001.b.2 (Five or more axes machine tools for milling) is amended by adding three paragraphs b.2.a, b.2.b and b.2.c with combinations of positioning accuracy and travel length parameters: equal to or less than 3.0 µm/less than 1m, equal to or less than 4.5 µm/greater than 1m and less than 2 m, and equal to or less than 4.5 + 7x(L–2) µm (L is the travel length in meters)/equal to or greater than 2m, respectively. In addition, this rule moves the phrase ''according to ISO 230/2 (2006)'' within b.2.b and b.2.c, and adds the phrase ''or national equivalents'' to harmonize with WA agreed text. A Note is added after b.2 to point people to 2B001.b.2.d for parallel mechanism machine tools.

2B001.b.2.d is added to clarify that 2B001 controls five or more axes machine tools for milling that are also 'parallel mechanism machine tools.' A Technical Note accompanying this paragraph explains that a 'parallel mechanism machine tool' is a machine tool having multiple rods, which are linked with a platform and actuators; each of the actuators operates the respective rod simultaneously and independently.

2B001.b.3 is amended by moving the phrase ''according to ISO 230/2(2006)'' in this paragraph and replacing ''along any linear axis'' with ''along one or more linear axis'' to clarify the control text. This rule also adds the phrase ''or national equivalents'' to harmonize with WA agreed text.

2B001.b.4.b is amended by replacing the period with a semi-colon to correct the punctuation.

2B001.f (Deep-hole-drilling machines and turning machines) is amended by removing the phrase ''and specially designed components therefor,'' because components for these machines are general and not specially designed.

2B006 (Dimensional Inspection or Measuring Systems, Equipment, and ''Electronic Assemblies'')

2B006.b.1 ('Linear displacement' measuring instruments) is amended by adding a Note to reference 2B006.b.1.c for controls on displacement measuring ''laser'' interferometers.

2B006.c (Equipment for measuring surface roughness (including surface defects)) is amended by replacing ''irregularities'' with ''roughness (including surface defects)'' and removing the phrase ''as a function of angle.'' This change will clarify the scope of controls to integrate some of the expanded abilities of measuring equipment.

2D001 (''Software'' for ''Development'' and ''Production'' for Listed Category 2 Equipment)

The Header is simplified, because a more detailed description of controlled software is now in the Items paragraph of the List of Items Controlled section.

The Items paragraph is amended by adding two paragraphs that split the controls that were previously in the Header, which separates ''use'' from ''development'' or ''production'' software in order to move 2B002 ''use'' software from 2D001 to the new 2D003. Paragraph .a controls ''development'' or ''production'' of equipment controlled by 2A001 or 2B001 to 2B009. Paragraph .b narrows the scope for ''use'' to equipment specified by 2A001.c, 2B001, or 2B003 to 2B009, which excludes most of 2A001 and all of 2B002 (Numerically controlled optical finishing machine tools equipped for selective material removal * * *.).

A Note is added to exclude ''part programming ''software'' that generates ''numerical control'' codes for machining various parts'' from 2D001 controls, because this software cannot directly operate the Computer Numeric Controller (CNC) equipment.

2D002 (''Software'' for Electronic Devices, Even When Residing in an Electronic Device or System, Enabling Such Devices or Systems To Function as a ''Numerical Control'' Unit, Capable of Coordinating Simultaneously More Than 4 Axes for ''Contouring Control'')

Note 1 is amended by replacing the word ''controlled'' with ''specified'' to harmonize with the WA list and clarify the meaning of the Note.

Note 2 is amended by replacing the word ''controlled'' with ''specified'' in two places to harmonize with the WA list and clarify the meaning of the Note. Also, a reference to 2D003 is added.

Note 3 is added to exclude ''software'' for the minimum necessary operation of machine tools not specified by Category 2 when such ''software'' is exported with the machine tools.

2D003 (''Software'', Designed or Modified for the Operation Of Equipment Specified by 2B002, That Converts Optical Design, Workpiece Measurements and Material Removal Functions Into ''Numerical Control'' Commands To Achieve the Desired Workpiece Form)

ECCN 2D003 is added to control the ''use'' software for 2B002 optical finishing machines, which is critical to the function of 2B002 machines. This ECCN is controlled for national security (NS2) and for anti-terrorism (AT1—Cuba, Iran, N. Korea, Syria and Sudan) reasons; see Supplement No. 1 to part 738 of the EAR. License Exception TSR is available to countries in Country Group B (see Supp. No. 1 to Part 740), see § 740.6 of the EAR.

Category 3—Electronics

3A001 (Electronic Components and Specially Designed Components Therefor) and 3A002 (General Purpose Electronic Equipment and Accessories Therefor)

3A001.a.7 (Field programmable logic devices) is amended by this rule. Paragraph a.7.a is revised by replacing ''digital input/outputs'' with ''single-ended digital input/outputs,'' which narrows the scope of control. The level of control is amended by revising the maximum number of single-ended digital input/outputs from ''greater than 200'' to ''500 or greater'' to reflect the advances made in recent years to Field Programmable Gate Array (FPGA) devices and to remove controls on older devices.

Paragraph a.7.b parameter ''system gate count'' is changed to ''an 'aggregate one-way peak serial transceiver data rate' or 200 Gb/s or greater'' to remove the arbitrary and problematic metric of system gates as a control parameter and replace it with a more modern and meaningful metric for FPGAs with embedded transceiver circuitry.

A Technical Note is added to define 'Aggregate one-way peak serial transceiver data rate,' which is the product of the peak serial one-way transceiver data rate times the number of transceivers on the FPGA.

3A001.b.2 (Microwave ''Monolithic Integrated Circuits'' (MMIC) power amplifiers) is amended by adding -70 dBm as an equivalent output power parameter to 0.1 nW in paragraph b.2.d, for consistency.

The frequency of 37.5 is changed to 37 GHz in paragraphs b.2.d and b.2.e.

For many years, controls on microwave components have used 37.5 GHz as the frequency breakpoint between military and civilian applications. In fact, the proper breakpoint is 37 GHz, as per the ETSI EN 300 197 standard.

Paragraph b.2.e is amended by removing the fractional bandwidth parameter, because a fractional bandwidth as large as 10%, within a band that is only 16% wide, is illogical. To compensate, this rule increases the output power parameter from 0.25 W (24 dBm) to 1.0 W (30 dBm) to align with state-of-the-art output power in this frequency range.

Paragraph b.2.f is amended by adding a ceiling to the operation frequency of 75 GHz, which is the top of the *V* band to align with waveguide bands. The average output power parameter is raised from 0.1 nW to 31.62 mW (15 dBm) with a ''fractional bandwidth'' greater than 10%, which aligns with the 15 dBm output power control threshold for network analyzers in 3A002.e.1.

Two new parameter paragraphs are added for MMIC power amplifiers controlled under b.2.g and b.2.h to add two new frequency ranges to align with the 90 GHz top of the E band-WR–12 waveguide upper limit. Paragraph b.2.g controls MMIC power amplifiers rated for operation at frequencies exceeding 75 GHz up to and including 90 GHz with an average output power greater than 10 mW (10 dBm) with a ''fractional bandwidth'' greater than 5%. Paragraph b.2.h controls MMIC power amplifiers rated for operation at frequencies exceeding 90 GHz and with an average output power greater than 0.1 nW (-70 dBm).

3A001.b.4 (Microwave solid state amplifiers and microwave assemblies/modules containing microwave solid state amplifiers) is amended by adding ''either'' to paragraph b.4.f.3 to eliminate an ambiguity in the current text. The Technical Note below this paragraph is corrected to harmonize with the WA list. Note 3 is added to clarify that 3A001.b.4 includes transmit/receive modules and transmit modules.

3A001.b.10 (Oscillators or oscillator assemblies) and 3A002.d.4 (signal generators) are amended by replacing the word ''for'' with ''anywhere within the range of'' in b.10.a, b.10.b, 3A002.d.4.a and d.4.b to clarify that oscillators or oscillator assemblies and signal generators, respectively, are controlled if it meets the parameters at any point within the selected ranges.

3A001.b.11 (''Frequency synthesizer'' ''electronic assemblies'') is amended by revising the ''frequency switching time'' in paragraph b.11.a from 312 ps to 156 ps. The frequency switching time threshold of 3A001.b.11.a is the inverse of the lower frequency control threshold (current, 312 ps = 1/3.2 GHz). The new threshold is 156 ps = 1/6.4 GHz. This would retain control on Digital to Analog Converter (DAC)-based synthesizer assemblies having sample rate exceeding 16 GSa/s (frequency is calculated by dividing sample rate by 2.5).

Paragraphs 3A001.b.11.b and 3A002.d.3.b are amended by revising the low-frequency threshold from 3.2 GHz to 4.8 GHz to accommodate the 802.11ac (Very High Throughput—VHT) amendment. The 802.11ac standard uses wider bandwidths for higher throughputs and data rates to address several uses, including wireless displays for in-home distribution of High Definition Television (HDTV).

Paragraphs 3A001.b.11.f, b.11.g, 3A002.c.2, c.3, d.1, d.2, d.3.f, d.4.a, d.4.b, d.5, e.1, and e.2, are amended by raising the high-frequency limit from 70 GHz to 75 GHz, which corresponds to the top of the V-band (waveguide). Aligning the specified frequency to standard waveguide frequency breakpoints makes this parameter more relevant to national security concerns.

3A002.c.4 is amended by revising the Heading from ''Dynamic signal analyzers'' to ''Signal analyzers'' and cascading the control parameters to clarify the controls.

Paragraph c.4.a is amended by removing ''a'' and revising the ''real-time bandwidth'' from ''40 MHz'' to ''85 MHz'' to update the control level. The definition for ''real-time bandwidth'' is also updated in Part 772 of the EAR to better define the concept of gap-free analysis of the input data, and to assure that the scope of control remains specific and focused, which is also the reason for adding paragraph c.4.b that adds a gap and windowing effect aspect to the control.

The Note to 3A002.c.4 is amended by changing ''dynamic signal analyzers'' to ''signal analyzers'' for clarity.

Technical Notes are added for 3A002.c.4.b to explain probability of discovery, also known as probability of intercept or probability of capture.

3A002.c.5 is added to add a new control parameter for ''frequency mask trigger,'' which provides the capability to capture sporadic transient RF signals within other closely spaced RF signals. A definition for ''frequency mask trigger'' is added to Part 772 in relation to this new paragraph.

3A002.d.3.a (''frequency switching time'' less than 312 ps) is removed as a parameter for frequency synthesized signal generators, because extension of the 802.11 standard for consumer wireless products in the frequency range 5–6 GHz has rendered the existing control threshold obsolete.

3A002.e (Network analyzers) is amended by adding ''An'' to the beginning of paragraph e.1 for consistency and correct grammar. This rule also removes the ''or'' at the end of the paragraph, because two additional paragraphs are added to cover frequency ranges up to 110 GHz. This change makes it clear that 110 GHz is the normal max frequency for 1.00 mm coaxial microwave connectors. A Technical Note is also added to define 'Nonlinear vector measurement functionality,' which is a term used in paragraph e.3. Paragraph e.4 (former paragraph e.2) is amended by revising the maximum operating frequency from 70 GHz to 110 GHz.

3A002.f (Microwave test receivers) is amended by revising the maximum frequency control threshold of 3A002.f .1 from 70 GHz to 110 GHz, to align with 3A002.e, because of the similarity between 3A002.e network analyzers and 3A002.f microwave test receivers.

3B001 (Equipment for the Manufacturing of Semiconductor Devices or Materials)

3B001.a.2 (Metal Organic Chemical Vapor Deposition (MOCVD) reactors) is amended by simplifying the control text to clarify that MOCVD systems used to produce nitride based devices are within the scope of control.

3B001.b (Equipment designed for ion implantation) is amended by removing and reserving paragraph b.1 (beam energy (accelerating votage) exceeding 1 MeV), which controlled ion implant systems used for the manufacture of memory integrated circuits (Example: FLASH NAND). This technology is ubiquitous and equivalent tools are readily obtained globally.

Paragraph b.2 is amended by raising the beam energy parameter and specification of the implant materials, which assures only equipment used in the production of radiation hardened ICs is captured.

Paragraphs b.3 and b.4 are amended by moving the ''or'' from the end of b.3 to the end of b.4, because a new paragraph b.5 is added.

Paragraph b.5 is added to control equipment using channeled silicon ion beams in heated equipment.

3A001.h (Multi-layer masks with phase shift layer not specified by 3B001.g) is amended by adding two new parameters. Paragraph h.1 specifies glass birefringence of the mask (less than 7 nm/cm), which delineates phase shift masks that are used for defining geometries consistent with the

lithography control. Paragraph h.2 specifies the light source wavelength of the lithography equipment (less than 245 nm), to control only phase shift masks that are consistent with the lithography control of 245nm wavelength source. This revision will control phase shift masks that are used for emerging Extreme Ultra-Violet (EUV) lithography. The addition of the phrase ''not specified by 3B001.g'' to the introductory text in 3A001.h resolves the possible ''double coverage'' between 3B001.g and 3B001.h.

3C002 (Resist Materials and ''Substrates'' Coated With Specified Resists)

License Exceptions GBS and CIV paragraphs are revised to read, ''Yes for 3C002.a provided they are not also controlled by 3C002.b through .e'', to be more accurate and concise.

Paragraph 3C002.a (Resists designed for semiconductor lithography) is amended by cascading the parameter paragraphs and adding a new paragraph a.2. Paragraph a.1 now controls positive resists adjusted (optimized) for use at wavelengths equal to or greater than 15 nm, but less than 245 nm. Paragraph a.2 controls resists adjusted (optimized) for use at wavelengths greater than 1 nm, but less than 15 nm. These revisions are made to be more specific about the controls.

Paragraph 3C002.c (All resists designed for use with X-rays, with a sensitivity of 2.5 J/mm^2 or better) is removed and reserved, because these resists are not used for the fabrication of semiconductor devices.

Paragraph 3C002.d (All resists optimized for surface imaging technologies) is amended by removing the reference to silylated resists, as well as the definition for silylation techniques in the Related Definition paragraph of the List of Items Controlled section, because it was determined that it is not necessary to specifically call out silylated resists.

Category 4—Computers

4D001 ''Software''

4D001.a is amended by deleting the term ''use,'' because no ''use'' software of concern could be identified for this entry, and by removing 4A002 from the scope of control, because it was removed in 2004.

Category 5 Part 1—''Telecommunications''

5A001 (Telecommunications Systems, Equipment, Components and Accessories)

The License Requirement section is amended by removing 5A001.i from NS2 and SL controls, because items previously controlled under paragraph .i are moved to paragraph .f.1 Paragraph .f.1 is already controlled under NS2. Paragraph f.1 is added to the SL control paragraph.

The License Requirement Notes paragraph is amended by replacing the reference to 5A001.i with 5A001.f.1.

License Exception LVS eligibility paragraph is amended by revising reference to paragraph .f to read f.2, f.3, f.4 in order to narrow the scope, because the interception equipment in 5A001.f.1 is too sensitive to receive License Exception LVS eligibility.

5A001.f (Mobile telecommunications jamming equipment) is amended by adding ''interception or'' in order to expand the scope of control to all mobile telecommunications jamming and interception equipment that is of national security concern, as well as equipment that monitors the network to detect jamming and interception that is of national security concern. 5A001.i was combined with the former 5A001.f as a clarification because interception and jamming are often interrelated functions. 5A001.f.1 (Interception equipment designed for the extraction of voice or data, transmitted over the air interface) is moved from 5A001.i and license requirements are not changed.

5A001.f.2 (interception equipment not specified in 5A001.f.1) is designed to control equipment that captures and processes the air interface (e.g., the air link between a handset and a base station, over which voice/data and metadata are transmitted) in order to extract client device or subscriber indicators (such as IMSI, TIMSI, IMEI), signalling or other metadata contained therein, but not without also processing the voice or data channels contained therein. Licenses are required for countries listed in NS2 and AT1 of the Commerce Country Chart in Supplement No. 1 to part 738 of the EAR.

5A001.f.3 (Jamming equipment) was the former 5A001.f and license requirements are not changed.

5A001.f.4 (Radio Frequency (RF) monitoring equipment designed or modified to identify the operation of items specified in 5A001.f.1, f.2, or f.3) is added to control passive counter surveillance tools. Licenses are required for countries listed in NS2 and AT1 of the Commerce Country Chart in Supplement No. 1 to part 738 of the EAR.

Regarding certain types of equipment that are not controlled by 5A001.f, the term 'interception equipment' excludes equipment used to operate or test the network (e.g., devices which measure signal strength, and do not require the signal's contents to be decoded, demodulated, or recorded, are not considered 'interception equipment'), and also readily available radio monitoring equipment for analog communications found in, for example, taxi-cab radios and home police scanners. The Note is amended to also generally exclude equipment designed for mobile telecommunications network operators, designed for the ''development'' or ''production of mobile telecommunications equipment or systems, or specially designed for the interception of analog Private Mobile Radio (PMR), IEEE 802.11 WLAN.

Nota Bene (NB) 1 is amended by removing the text ''For GNSS jamming equipment,'' and adding the text ''For items specified by 5A001.f.1 (including as previously specified by 5A001.i), see also 5A980 and U.S. Munitions List (22 CFR 121)'', because 5A001.f is expanded and there may be some related equipment in the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120–130) that should be considered when classifying this type of equipment.

A Nota Bene (NB) 2 is added to reference 5A001.b.5 for radio receivers in order to clarify that 5A001.f does not apply to radio receivers.

5A001.h (Counter Improvised Explosive Device (IED) equipment and related equipment) is amended by adding a new paragraph h.2 to control 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.

The Nota Bene (NB) is amended by removing the phrase ''ECCN 5A001.f and,'' because that reference now appears in 5A001.h.1.

5A001.i is reserved and the items are moved to 5A001.f.1, as explained above. To harmonize with this move, seventeen (17) references to 5A001.i are changed to 5A001.f.1 in § 738.3(a)(1) (Commerce Country Chart structure—ECCNs that require a license to all destinations), six (6) references are changed in § 740.2(a)(3) (Restrictions on all license exceptions), five (5) references are changed in § 742.13 (a)(1) (License requirements for communications intercepting devices * * *), six (6) references are changed in § 746.7(a)(1) (Iran license requirements), and six (6)

references are changed in § 752.3(a)(7) (Special Comprehensive License ineligible items).

The Nota Bene (NB) of 5A001.i is amended to reference 5A001.f.1 for items previously specified by 5A001.i.

5A980 (Devices primarily useful for the surreptitious interception of wire, oral, or electronic communications) is amended to replace the reference to 5A001.i with 5A001.f.1 in the Heading and the Related Controls paragraph of the List of Items Controlled section. The structure of the List of Items Controlled section is corrected by adding the Unit paragraph, adding the Related Controls Header to the Related Controls paragraph, and adding the Related Definitions paragraph.

5B001 (Telecommunication Test, Inspection and Production Equipment, Components and Accessories)

The License Exception STA eligibility paragraph is amended by removing ''use,'' because ''use'' was removed from control in 5B001.a.

5B001.a. is amended to delete ''or use'' as no ''use'' software of concern could be identified for this entry.

The Note to 5B001.a was amended to replace ''control'' with ''apply to'' to conform with Wassenaar.

5D001 (''Software'')

The SL control paragraph in the License Requirements section is amended by replacing the reference to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

The License Requirements Notes paragraph in the License Requirements section is amended by replacing three references to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

5D980 (Other ''Software'', Other Than That Controlled by 5D001 * *)*

The Header is amended by replacing the reference to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

The Related Control paragraph in the List of Items Controlled section is amended by replacing three references to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

5E001 (''Technology'')

The SL control paragraph in the License Requirements section is amended by replacing the reference to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

The License Requirements Notes paragraph in the License Requirements section is amended by replacing two references to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

5E001.d (''Technology'' * * * for the ''development'' or ''production'' of Microwave Monolithic Integrated Circuit (MMIC) power amplifiers specially designed for telecommunications) is amended by revising paragraphs 5E001.d.4, d.5, and d.6, as well as adding new paragraphs 5E001.d.7 and d.8, to mirror the revision made to 3A001.b.2 (explained above).

*5E980 (''Technology'', other than that controlled by 5E001.a * * *)*

The Header is amended by replacing two references to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

The Related Control paragraph in the List of Items Controlled section is amended by replacing five references to 5A001.i with 5A001.f.1, because that equipment was moved in 5A001.

Category 5 Part 2—''Information Security''

The Cryptography Note (Note 3 to Category 5 Part 2 (Cat 5P2)) is changed in two ways. It is reformatted in order to add a new paragraph .b, and a new Note to the Cryptography Note is added to help industry better understand how the existing 'mass market' provisions and requirements of the Cryptography Note (i.e., new paragraph a.) are applied.

Regarding the new paragraph b., this new paragraph provides that ECCN 5A002 and 5D002 do not control certain hardware components of existing items described in paragraph a. of the Note. While certain components of ''mass market'' products described in paragraph a. to Note 3 are themselves sold or distributed through ''mass market'' channels and are therefore decontrolled under paragraph a., other comparable components for ''mass market'' items are not separately sold to the public via retail channels. New paragraph b. removes ECCN 5A002 and 5D002 controls from hardware components that are factory-installed into a mass marketed product, and from functionally equivalent aftermarket replacements of Original Equipment Manufacturer (OEM) components—components that are identical in form, fit and function to the OEM components, with certain restrictions as follows.

First, paragraph b. is limited to hardware components for existing items described in paragraph a. of Note 3 and to hardware components that have been designed for those existing items. Paragraph b. does not apply to a component that is designed for a brand new type of item that has never been sold before, or that has not previously had cryptographic functionality. Instead, the end-product must first be established as a 'mass market' product before its components may qualify for paragraph b.

Second, paragraph b.1. excludes components whose primary function or set of functions is ''information security.'' Therefore, cryptographic co-processors, cryptographic libraries/modules, Trusted Platform Modules (TPMs), and components that provide an open cryptographic interface are not eligible for decontrol under paragraph b.

Third, paragraph b.2. excludes components that could introduce new cryptographic functionality or enhance existing cryptographic functionality into an array of products, if such functionality does not already exist in the 'mass market.' Components that provide enhanced or additional cryptographic functionality to an existing 'mass market' product are not decontrolled under paragraph b. This exclusion applies to both 'standard add-on accessories'—additions to 'mass market' products that impart new features—and to 'tailored add-on accessories'—additions to 'mass market' products that transform the product into a non-consumer type item (e.g., tailored for network operators, security operators, police/military/intelligence, etc.)

Paragraph b.3 excludes components that provide custom/substitute cryptography or made-to-order customizations (e.g., tailored form/fit/function) but no algorithm changes. The requirements set forth in Section 742.15(b) for mass market components also apply to the hardware components eligible for decontrol under new paragraph b. to Note 3.

Paragraph b.4. states that details of the component and end-item must be available to BIS when necessary. BIS does not intend to change the scope of any of the reporting requirements under License Exception ENC. In particular, BIS does not intend to require exporters to collect any more information on the products that a component is going into than is currently required under the EAR.

In adding this new paragraph b. to the Cryptography Note (Cat 5P2 Note 3) in the existing provisions of Cat 5P2, Note 3 become new paragraph a.

In terms of how these existing 'mass market' provisions are applied, paragraph 1 of the new Note to the Cryptography Note provides guidance on what it means for an item to be considered 'mass market' and 'generally available to the public'. This Note paragraph 1 makes it clear that in order

to meet the 'mass market' provisions of Cat 5P2 Note 3 paragraph a., the item must be of potential interest to a wide range of individuals and businesses, and potential customers do not need to specifically consult with a vendor or supplier to learn how much the item costs or what its main functional specifications are.

Paragraph 2. of the Note to the Cryptography Note also makes clear that in determining whether an item meets the 'mass market' qualifications of Note 3 paragraph a., relevant factors such as quantity, price, required technical skill, existing sales channels, typical customers, typical use, or any exclusionary practices of the supplier may be taken into account, in addition to other possible considerations.

The purpose of this new Note to the Cryptography Note is not to change the existing scope of control of the Cryptography Note, but to make current practices of interpretation more clear to the public.

Although the control text only mentions hardware components, the decontrol also applies to software components that are specially designed for a particular hardware component that has already been released from control.

For a component that meets new paragraph b. of the Cryptography Note 3 in Category 5 Part 2 of the Commerce Control List (Supplement No. 1 to part 774) that has previously been classified under ECCN 5A002 pursuant to § 740.17(b)(3), a new classification by BIS (i.e., a request for a CCATS) is not required to make the component eligible for mass market treatment under § 742.15(b)(3) and reclassified under ECCN 5A992. However, a reclassified component must be included in a self-classification report submitted to BIS and the ENC Encryption Request Coordinator no later than February 1 following the calendar year in which it is first exported or reexported as a mass market item (see § 742.15(c) for complete instructions on submitting encryption self-classification reports).

5A002 (''Information Security'' Systems, Equipment and Components Therefor)

The Related Controls paragraph in the List of Items Controlled Section is amended by redesignating paragraphs (1) and (2) as (2) and (3), and adding a new paragraph (1) to specify that 5A002.a controls ''components'' providing the means or functions necessary for ''information security.'' All such ''components'' are presumptively ''specially designed'' and controlled within 5A002.a. Therefore, no analysis of the definition of ''specially designed'' is needed. BIS is making this change to clarify that no changes are made to how the U.S. Government currently interprets the scope of 5A002.a as a result of the implementation of the newly revised definition of ''specially designed.''

On June 19, 2012 (77 FR 36419), BIS published the advanced notice of proposed rulemaking (ANPRM) entitled ''Feasibility of Enumerating ''Specially Designed'' Components.'' In that ANPRM, BIS requested public comments to identify where on the CCL it was possible to replace the term ''specially designed'' with other control criteria. Category 5, Part 2 was identified by one commenter as a good candidate for enumerating ''components'' that warrant control. This commenter supported making 5A002.a into a positive list of ''components'' controlled for ''information security.'' The commenter indicated 5A002 is already more of an enumerated control versus a catch-all control and therefore the term ''specially designed'' was not needed. This new Note to paragraph a. is responsive to that comment and also consistent with the larger Export Control Reform (ECR) Initiative objective of making the CCL more ''positive.''

The addition of Note 1 to the Related Controls paragraph of 5A002 does not change the scope of the ECCN, but rather is limited to adding an explanatory note regarding the scope of ''components'' controlled under 5A002.a. Currently, the U.S. Government is working on a regime proposal to the Wassenaar Arrangement that would replace the term ''specially designed'' in 5A002.a with ''providing the means or functions necessary.'' This work is being undertaken by the U.S. Government to better reflect the intent of this control on ''components'' under 5A002.a and to better reflect how the U.S. Government currently interprets the scope of this control on ''components'' under 5A002.a.

The Note g. to the Items paragraph is also amended by replacing the reference to paragraphs .b to e. of the Cryptography Note (Note 3 in Category 5—Part 2) with paragraphs a.2. to a.5. of the Cryptography Note in order to harmonize with the changes made to the Cryptography Note.

The Note to the Items paragraph is amended by adding the phrase ''or not exceeding 100 meters according to the manufacturer's specifications for equipment that cannot interconnect with more than seven devices'' to the end of paragraph i. to raise the range, because there are many products on the market today that exceed this limitation. This revision will only decontrol such equipment that cannot interconnect with more than seven (7) devices (e.g., Bluetooth). If a type of Wireless Personal Area Network (WPAN) equipment can interconnect with more than seven devices, it continues to only be released by 5A002 Note i. if its nominal operating range does not exceed 30 meters.

In addition, the definition of ''personal area network,'' found in Part 772 of the EAR, is updated to account for this range increase in paragraph i. of the Note.

5A002.a.1 is amended by adding the phrase ''or execution of copy-protected ''software'' to the exclusion list in paragraph a.1, as well as Technical Note 1, to clarify that such items are still excluded from control. Prior to June 25, 2010, products with cryptographic functionality limited to copy protection (and other digital rights management (DRM) functionality) were originally decontrolled by decontrol Note c. to 5A002. When Note 4 to Category 5, Part 2 (Cat 5P2) was implemented on June 25, 2010, paragraph c. of the decontrol note to 5A002 was removed and a pointer (Nota Bene) to Cat 5P2 Note 4 was added to make clear that this decontrol was subsumed into Cat 5P2 Note 4. However, since then, exporters have been confused about how copy protection falls under Note 4. To make it clear that copy protection is not controlled in 5A002, this rule adds the phrase ''or execution of copy-protected software'' into the exclusion note. This does not change the scope of what is decontrolled, as Note 4 in Cat 5P2 remains unchanged and in full effect. By application of Note 4 in Cat 5P2 (especially paragraph a.3, regarding digital rights management (DRM)), copy protection and other DRM functionality is excluded from classification under Cat 5P2, even if the copy protection scheme (or other DRM) uses ''cryptography.'' Moreover, copy protection functionality is not specified for control in any CCL Category. Accordingly, EAR99 software with addition of cryptographic functionality limited to copy protection remains classified as EAR99.

A Note to 5A002.a.2 is added to clarify that 5A002.a.2 includes systems or equipment, designed or modified to perform cryptanalysis by means of reverse engineering.

5A002.a.7 (Non-cryptographic information and communications technology (ICT) security systems and devices) is amended by replacing the phrase ''evaluated to an assurance level exceeding'' with ''that have been

evaluated and certified by a national authority to exceed'' in order to clarify that the intent is to control only those items which have been evaluated against the applicable criteria and have subsequently received a certification from a national security authority attesting that the items exceed class EAL–6 (evaluation assurance level) of the Common Criteria (CC) or equivalent.

5A992 (Equipment not controlled by 5A002) is amended by adding a Note to paragraph .b of the Items paragraph in the List of Items Controlled section. The Note is added to clarify that 5A992 does not control products with cryptographic functionality limited to copy protection.

5E002 (''Technology'') is amended by adding a Note to clarify that ''5E002 includes ''information security'' technical data resulting from procedures carried out to evaluate or determine the implementation of functions, features or techniques specified in Category 5, Part 2''. The purpose of this Note is to clarify two things. First, that existing 5E002 controls on ''technology'' includes ''information security'' technical data that may be revealed or conveyed by the security evaluation of a product (e.g., for government or commercial certification purposes). Second, this Note is added to clarify that reverse engineering can be viewed as a form of product evaluation; consequently, 5E002 includes reverse engineering data and reports that detail the implementation of controlled ''information security'' functions, features or techniques by an item.

Category 6—Sensors and Lasers

6A001 (Acoustic Systems, Equipment and Components)

6A001.a.1.a.2 (Underwater survey equipment designed for seabed topographic mapping) is amended by replacing ''all'' with ''any'' and cascading the parameters in order to add a new control for additional survey equipment identified in 6A001.a.1.a.2.b. Note that the parameters for the previously controlled survey equipment, now in 6A001.a.1.a.2.a, remain unchanged.

6A001.a.1.a.2.b is added to control underwater survey equipment not specified by 6A001.a.1.a.2.a. A new Technical Note is added that states acoustic sensor pressure rating determines the depth rating in 6A001.a.1.a.2. Additionally, the existing Technical Note defining 'sounding rate' is modified to specify 100% coverage.

6A001.a.1.a.3 (Side Scan Sonar (SSS) or Synthetic Aperture Sonar (SAS), designed for seabed imaging) is amended by adding an 'along track resolution' parameter to a revised a.1.a.3.b and moving the 'across track resolution' parameter in paragraph a.1.a.3.b to new paragraph a.1.a.3.c. Editorial revisions are made to the Technical Notes as well.

6A002 (Optical Sensors or Equipment And Components Therefor) is amended by replacing the periods with semi-colons at the end of paragraphs a.3.a.2.b, a.3.b.2.b, a.3.g.3 and c.3 in the Items paragraph of the List of Items Controlled section to correct the punctuation. In addition, 6A002.a.3.d.2.b is amended by removing ''(SPRITE),'' because the SPRITE is no longer in production and the performance of the detector and the sensors it was integrated into has been surpassed by more modern Focal Plane Array (FPA) developments. The word ''detector'' is added before element. ''Element'' is made plural. Capital letters PR, I, T and E, are all replaced by lower case letters.

6A005 (''Lasers'' (Other Than Those Described in 0B001.g.5 or .h.6), Components and Optical Equipment)

Paragraphs a.2, a.3, b.2, and b.3 in the Items paragraph of the List of Items Controlled are amended by replacing ''520'' with ''510.'' Frequency-doubled Yb:YAG lasers using second harmonic generation (SHG) emit green light at 515 nm. These lasers are increasingly being used in commercial laser materials processing, replacing Nd:YAG lasers. Given the development of this application, it was determined appropriate to change the wavelength from ''520'' to ''510'' in 6A005.a.3 and 6A005.b.3, to control Yb:YAG SHG lasers at the same power level as Nd:YAG SHG lasers. The change to a.2 and b.2 accounts for the shift in wavelength in a.3 and b.3 so a gap in control was not created. As a result of this change the NP controls are expanded to include 6A005.a.3 and all of b.3, instead of just b.3.a. 6A005.a.3 is added to paragraph (d) of the License Requirements Note, which outlines NP controls.

6A005.a.6.a (Non-''tunable'' continuous wave ''(CW) lasers'') is amended by removing paragraphs a.6.a.1 and a.6.a.2 to simplify the control text. The output power control level of 150 W is replaced with 200 W to adjust for technical advancements.

6C004 (Optical Materials)

6C004.b (Electro-optic materials and non-linear optical materials) and .c (Non-linear optical materials, other than those specified by 6C004.b) are amended in order to control new materials that can be used in military applications. Advances in crystal growth have facilitated the manufacturing of additional non-linear optical materials. The new citations identify specific materials by name or using the updated parameters under 6C004.c.3 and c.4 that can be fabricated into non-linear optical components. These non-linear crystals have recently become useful due to advances in manufacturing. They can now be grown large enough and with low defects so that they can be cut and polished into optical components. The newly listed materials are of interest because they can operate at high optical powers that cause other non-linear materials to degrade.

6C005 (Synthetic crystalline ''laser'' host material in unfinished form) is amended by removing 6C005.b (Alexandrite) and reserving the paragraph, because Alexandrite lasers are tuneable from 700 to 800 nm and the majority of applications for alexandrite lasers are for dermatology and hair removal.

Category 7—Navigation and Avionics

7A001 (Accelerometers) is amended by replacing the ''bias'' ''repeatability'' of less (better) than 5,000 micro g with 1,250 micro g in paragraph a.2.a and replacing the ''scale factor'' ''repeatability'' of less (better) than 2,500 ppm with 1,250 ppm in paragraph a.2.b, because improvements in Microelectromechanical Systems (MEMS) technology have led to availability of equivalent performance accelerometers in commercial products, as well as widespread foreign availability.

7D003 (''Software'')

The License Exception STA ineligibility paragraph is amended by removing the phrase ''d.1 to d.4 or d.7'' because these controls have been moved to a new ECCN 7D004, and paragraph 7D003.d is removed and reserved by this rule. Specifically, these controls are moved to7D004.a to .g, with the exception of 7D003.d.5 (Airborne automatic direction finding equipment). 7D003.d.5 is removed and reserved as reflected in the new paragraph 7D004.e, because there was no reason for this relatively rudimentary item to be identified separately from other navigation entries. Because the ''source code'' in 7D003.d is already addressed elsewhere more specifically, this entry created a redundancy in controls and is removed. For more details about the redundancy see the preamble text for 7D004 below.

A Nota Bene (N.B.) is added to reference the new location (7D004) for the control of 7D003.d source code.

7D004 (''Source code'' incorporating ''development'' ''technology'' specified by 7E004.a or 7E004.b) is added to the CCL to control ''source code'' moved from 7D003.d. Previously, two sets of technology controls addressed the flight controls topic. The first was 7E001, the GTN-based ''development'' technology controls relating to the 7D003 ''source code'' entry. The second set of technology controls are under 7E004.a and 7E004.b, which enumerate specific flight control technologies of concern. The existence of both sets of controls created an obviously undesirable redundancy. However, it was discovered that pertinent ''source code'' ''software'' and ''technology'' was removed from control by the WA agreement, which the U.S. will address with WA in future meetings to establish appropriate multi-lateral national security level controls. In the meantime, ''source code'' for the ''development'' of fly-by-wire control systems is added to 0D521 No. 2. The following technology is added to 0E521 No. 6: ''Technology'' for fly-by-wire control systems, as follows: a. ''Technology'' according to the General Technology Note for the ''development'' of ''software'' controlled by 0D521 No. 2; or b. ''Development'' ''technology'' for ''active flight control systems'' for control law compensation for sensor location or dynamic airframe loads, i.e., compensation for sensor vibration environment or for variation of sensor location from the center of gravity. (See Supplement No. 5 to part 774.) There is a pending rule that adds technology to 0E521 Nos. 2–5, therefore this rule reserves those paragraphs in the table.

As described in the final rule that established the 0Y521 series and that was published in the **Federal Register** on April 13, 2012 (77 FR 22191), items are added to the 0Y521 series upon a determination by the Department of Commerce, with the concurrence of the Departments of Defense and State, that the items should be controlled for export because the items provide at least a significant military or intelligence advantage to the United States or foreign policy reasons justify control. The ''source code'' for the ''development'' of fly-by-wire control systems in 0D521 No. 2 and the fly-by-wire technology in 0E521 No. 6 is controlled for regional stability (RS) Column 1 reasons. ECCN 0D521 and 0E521 items are subject to a nearly worldwide license requirement (i.e., for every country except Canada) with a case-by-case license review policy, through regional stability (RS Column 1) controls. Only License Exception GOV is available for this technology for official use by personnel and agencies of the U.S. Government.

If your fly-by-wire software or technology was controlled by 7D003 or 7E001 and is now classified as 0D521 No. 2 or 0E521 No. 6, then you do not need to replace your existing licenses or classifications (CCATS), because it is considered a ''non-material'' change pursuant to Section 750.7(c)(1)(viii) of the EAR. If you were going to request an extension for licenses with these ECCNs, you may still request extensions of these licenses instead of replacing them because of this ECCN change.

In order to maintain the more detailed descriptions of the specific flight control topics covered by 7E004.a and 7E004.b, WA agreed to remove the 7E001 reference to flight control ''source code''. This modification is accomplished by moving 7D003.d to 7D004, and removing 7D004 from 7E001 coverage. Reference language is added to the new 7D004 that points to the technology controls in 7E004.a and 7E004.b, as well as 0D521 No. 2 and 0E521 No. 6 for fly-by-wire source code and technology.

A new exclusion Note is added to 7D004 that states that ''7D004 does not apply to ''source code'' associated with common computer elements and utilities (e.g., input signal acquisition, output signal transmission, computer program and data loading, built-in test, task scheduling mechanisms) not providing a specific flight control system function,'' to clarify that the scope of these entries is limited to flight control system function.

7E001 (''Technology'' According to the GTN for the ''Development'' of 7A, 7B or 7D)

The Header is amended to specify the three software ECCNs 7D001, 7D002, and 7D003, in order to remove the new 7D004 from the scope of 7E001, which was created to control flight control ''source code'' in one place instead of in 7D003 and 7E001. The Related Controls paragraph is amended by adding a reference to 0D521 No. 2 for ''source code'' for the ''development'' of fly-by-wire control systems and 0E521 No. 6 for ''technology'' for the ''development'' of fly-by-wire control systems. See explanation for the creation of 0D521 No. 2 and 0E521 No. 6 under 7D004 in the preamble of this rule.

7E004 (Other ''technology'')

The Related Controls paragraph in the List of Items Controlled section is amended to add references to 0D521 No. 2 (''source code'' for the ''development'' of fly-by-wire control systems), and 0E521 No. 6 (for ''technology'' for the ''development'' of ''software'' controlled by 0D521 No. 2).

7E004.b (''Development'' ''technology'', as specified, for ''active flight control systems'' (including fly-by-wire or fly-by-light)) is amended to more specifically list photonic technology of concern by providing descriptions to positively identify the critical photonic functions in a fly-by-light system.

7E004.b.1 is replaced, because the technology for interconnecting multiple microelectronic processing elements, such as microprocessors, in order to speed up processing is now widely available. In addition, active flight control solutions today can easily run in real-time on a single processor. 7E004.b.1 now controls fly-by-light technology. Photonics-based flight control systems, or ''fly-by-light'', are in development to provide a number of system-level benefits, including tolerance of elevated Electro-Magnetic Interference (EMI) and reduced systems volume and weight.

7E004.b.2 is removed and reserved, because control law compensation technology as described at the general level is now widely available.

7E004.b.3 is revised, because the former text for 7E004.b.3 dealt with fault detection, isolation, tolerance, and resolution (i.e., ''reconfiguration''). The only technique implied by the text is ''redundancy'', which was too broad and could encompass technology that is widely understood and employed. The revised 7E004.b.3 text updates the fault detection and isolation aspects to a more appropriate characterization of the emerging technology for protection-predictive diagnosis. This technology can determine the onset of a future failure for more preemptive mitigation actions.

7E004.b.4 (''active flight control system'' technology) is revised, because it was outdated. The revised text links the real-time identification of component failures, and allows for mitigation during degradations prior to full failure. These linked 7E004.b.3 and 7E004.b.4 updates better represent the emerging state-of-the-art technologies with emphasis on preemption and mitigation capabilities.

Note to 7E004.b.4 and Note to 7E004.b are added and the Note to 7E004.b.3 is revised to clarify that the scope of these entries is limited to flight control system function. The Note to 7E004.b.5 is changed to conform to the WA text.

Category 9—Aerospace and Propulsion

9A001 (Aero gas turbine engines) is amended by replacing the phrase ''Participating State'' with ''Wassenaar

Arrangement Participating State'' in the introductory text of paragraph .a and .b in Note 9A001.a of the Items paragraph in the List of Items Controlled section, because there is currently no definition for this term in the EAR. However, it is understood that it refers to members of the Wassenaar Arrangement.

9A018 (Equipment on the Wassenaar Arrangement Munitions List)

ECCN 9A018 is amended by revising the List of Items Controlled section. 9A018.b is amended to implement the WA agreements for 2012 to ML6 on the WA Munitions List. Paragraph 9A018.b is separated into two parts. 9A018.b.1 covers ground transport vehicles (including trailers) and parts and components therefor designed and modified for non-combat military use. 9A018.b.2 is the modified portion of the former 9A018.b, which covers other ground vehicles. Also, a Note is added to exclude vehicles for transporting money or valuables. The revision clarifies that ''all-wheel drive'' vehicles have transmissions that supply drive to the front and rear wheels simultaneously even if the vehicle has other wheels that provide no driving force. The second change limits the scope of the paragraph to vehicles with a gross vehicle weight rating greater than 4,500 kilograms. The third change replaces the term ''capable of off road use'' with the term ''designed or modified for off road use.'' The fourth change is that ''components'' are separated out from the vehicles and placed in 9A018.b.2 with parameters.

9E003 (Other ''Technology'')

9E003.a.5 (Cooled turbine blades, vanes or ''tip-shrouds'') is amended by increasing the gas path temperature from 1643K (1370 °C) to 1693 K (1420 °C), because as the material development for airfoils has reached a steady state, increases in higher ''combustor exit temperature'' can only come from advanced airfoil cooling. Taking note of the higher combustor exit temperature for 9E003.a.2 that was implemented in 2012, it then follows to increase the limiting temperatures for cooled turbine blades, vanes and ''tip-shrouds'' in 9E003.a.5.

A Technical Note is added to define 'gas path temperature' as this term is used in the newly revised 9E003.a.5 parameter.

9E003.h.3 is amended by replacing the period with a semi-colon.

Supplement No. 1 to Part 774 (the Commerce Control List), Supplement No. 2 ''General Technology and Software Notes''

The ''General Software Note'' (GSN) is amended by adding some provisions that align with what WA Participating States have already been doing. While WA implements the GSN as a decontrol note, the U.S. implements it as criteria for License Exception TSU and a cross reference to § 740.13 is included. Additionally, paragraph 2 of the GSN that refers to ''in the public domain,'' is replaced with a reference to Section 734.3(b)(3) for regulations that set forth provisions for ''publicly available technology and software.''

Paragraph 3 of the GSN sets forth the provision to cover minimum necessary ''software'' for the installation, operation, maintenance (checking) or repair of authorized equipment. It was decided to add ''object code'' to make sure that ''source code'' is not released by the GSN. Also a Note was included to clarify that the minimum necessary ''object code'' is not software that can enhance or improve the performance of an item or provide new features or functionality. The GSN does not apply to ''software'' controlled by Category 5 Part 2 ''Information Security,'' instead a similar note addresses such ''software'' in Note 3 to Category 5 Part 2 ''Cryptography Note.''

Supplement No. 5 to Part 774 (Items Classified Under ECCNS 0A521, 0B521, 0C521, 0D521 AND 0E521)

This rule revises section 0D521 and 0E521 of Supplement No. 5 to part 774 to add two new entries 0D521 No. 2 and 0E521 No. 6. The explanation for these additions is found under 7D004 in the preamble of this rule.

Supplement No. 1 to § 740.11 (Additional restrictions on use of license Exception GOV) is amended by removing the phrase ''radio frequency (RF) transmitting equipment'' and adding in its place ''Counter Improvised Explosive Device (IED) equipment and related equipment'' in two places in paragraph (a)(1)(vii)(C) and in two places in paragraph (b)(1)(vii)(C), because the scope of 5A001.h is expanded to control more equipment.

Part 742 (Control Policy—CCL Based Controls)

Section 742.15 (Encryption Items) is amended by revising paragraph (d). This rule adds paragraph (d)(2) to grandfather classification requests and encryption registrations submitted after June 15, 2010 for components that received a classification of 5X002 § 742.17(b)(3) and that meet the newly added paragraph (b) of the Cryptography Note 3 in Category 5 Part 2 of the Commerce Control List in Supplement No. 1 to part 774, if you include these components in your self-classification report.

Part 743 Special Reporting

WA has three levels of controls as reflected in its Basic List (BL), Sensitive List (SL), and Very Sensitive List (VSL). 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 United States 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, STA, 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.

The Note to Section 743.1(c)(1)(ii) is simplified by combining the list of software and technology that require WA reporting under ECCNs 2D001, 2E001 and 2E002, as well as harmonizing these requirements with the changes made to the WA Sensitive List.

Part 770 Interpretations

Section 770.2 is amended by revising paragraph (h) ''Ground Vehicles'' to harmonize with changes WA made to ML 6. WA changed ML 6 to clarify the scope of ML 6 by adding three specific parameter paragraphs to distinguish military vehicles from commercial vehicles used for security.

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

The definition for ''diffusion bonding'' is amended by removing the word ''molecular'', replacing the phrase ''two separate metals'' with ''two separate pieces of metals'', and adding a phrase ''wherein the principal mechanism is interdiffusion of atoms across the interface'' to the end of the definition. It was inappropriate to use the term ''molecular'' in describing metallic bonds, because molecules do not exist in solid-state metals. In addition, to achieve diffusion bonding, interdiffusion of at least two separate atoms of metals across the interface must occur. Then, through the diffusion bonding, the atoms are joined into

diffusion bonded metals (metallic bonds).

The definition for ''dynamic signal analyzers'' is removed from § 772.1. The existing controls on Dynamic Signal Analyzers are commonly interpreted to require both phase and amplitude at the output. By deleting the concept of ''Dynamic Signal Analyzer'' and replacing it with ''Signal Analyzer'' the requirement that both phase and amplitude be in the output is removed.

The definition for ''frequency mask trigger'' is added to define pulse equipment (3A002.c.5) that allows the detection and processing of unknown short duration, transient, sporadic, and burst RF signals.

The definition for ''object code'' is amended by replacing ''(Cat 9)'' with ''(GSN)'' because this term is not used in Cat 9 and it is now used in the General Software Note to make sure that the GSN only covers object code and not source code.

The definition for ''personal area network'' is amended by adding the phrase ''and their nearby surrounding spaces'' to harmonize with the range increase included in the 5A002 exclusion Note .i limits (not exceeding 100 meters).

The definition for ''real-time bandwidth'' is revised to better define the concept of gap-free analysis of the input data, and to assure that the scope of control remains focused on what ''signal analyzers'' was intended to control.

The definition for ''space-qualified'' is amended by removing the reference to Cat 8, because Cat 8 no longer has ''space-qualified'' equipment. The revision of the text was to clarify the definition and close a loophole.

The definition for ''substrate blanks'' is amended by replacing ''Cat 6'' with ''Cat 3 and 6,'' because this term is now used in 3B001.h.1 to control multi-layer masks with a phase shift layer.

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., p. 783 (2002), as amended by Executive Order 13637 of March 8, 2013, 78 FR 16129 (March 13, 2013), and as extended by the Notice of August 15, 2012, 77 FR 49699 (August 16, 2012) has continued the EAR in effect under the International Emergency Economic Powers Act (50 U.S.C. §§ 1701 *et seq.*). BIS continues to carry out the provisions of the Export Administration Act, as appropriate and to the extent permitted by law, pursuant to Executive Order 13222 as amended by Executive Order 13637.

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 June 20, 2013, 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 August 19, 2013. Any such items not actually exported before midnight, on August 19, 2013, 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 to be a ''significant regulatory action'' although not economically significant, under 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 Jasmeet Seehra, OMB Desk Officer, by email 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 30-day 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 41 member countries that act on a consensus basis and the changes set forth in this rule implement agreements reached at the December 2012 plenary session of the WA. Because 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 were delayed to allow for notice and comment and a 30-day delay in effectiveness, 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 738

Exports.

15 CFR Parts 740 and 752

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 Parts 746 and 774

Exports, Reporting and recordkeeping requirements.

15 CFR Parts 770 and 772

Exports.

Accordingly, Parts 738, 740, 742, 743, 746, 752, 770, 772, and 774 of the Export Administration Regulations (15 CFR parts 730–774) are amended as follows:

PART 738 [AMENDED]

■ 1. The authority citation for Part 738 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 15, 2012, 77 FR 49699 (August 16, 2012).

■ 2. Section 738.3 is amended by revising paragraph (a)(1) to read as follows:

§ 738.3 Commerce Country Chart structure.

(a) * * *

(1) ECCNs 0A983, 5A001.f.1, 5A980, 5D001 (for 5A001.f.1, or for 5E001.a (for 5A001.f.1 or for 5D001.a (for 5A001.f.1))), 5D980, 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1)) and 5E980. A license is required for all destinations for items controlled under these entries. For items controlled by 0A983, 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1)) and 5E980, no license exceptions apply. For items controlled by 5A001.f.1, 5A980, 5D001 (for 5A001.f.1 or for 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1))) and 5D980, License Exception GOV may apply if your item is consigned to and for the official use of an agency of the U.S. Government (see § 740.2(a)(3)). If your item is controlled by 0A983, 5A001.f.1, 5A980, 5D001 (for 5A001.f.1 or for 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1))), 5D980, 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1)) or 5E980 you should proceed directly to Part 748 of the EAR for license application instructions and §§ 742.11 or 742.13 of the EAR for information on the licensing policy relevant to these types of applications.

* * * * *

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 15, 2012, 77 FR 49699 (August 16, 2012).

■ 4. Section 740.2 is amended by revising paragraph (a)(3) to read as follows:

§ 740.2 Restrictions on all License Exceptions.

(a) * * *

(3) The item is primarily useful for surreptitious interception of wire, oral, or electronic communications, or related software, controlled under ECCNs 5A001.,f.1 5A980, 5D001 (for 5A001.f.1 or for 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1))), or 5D980, unless the item is consigned to and for the official use of an agency of the U.S. Government (see § 740.11(b)(2)(ii) of this part, Governments (GOV)). No license exceptions apply for 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1)) or for 5E980.

* * * * *

§ 740.11 [Amended]

■ 5. Supplement No. 1 to § 740.11 is amended by removing the phrase ''radio frequency (RF) transmitting equipment'' and adding in its place ''Counter Improvised Explosive Device (IED) equipment and related equipment'' in two places in paragraph (a)(1)(vii)(C) and in two places in paragraph (b)(1)(vii)(C).

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 15, 2012, 77 FR 49699 (August 16, 2012); Notice of November 1, 2012, 77 FR 66513 (November 5, 2012).

■ 7. Section 742.13 is amended by revising paragraph (a)(1) to read as follows:

§ 742.13 Communications intercepting devices; software and technology for communications intercepting devices.

(a) *License requirement.* (1) In support of U.S. foreign policy to prohibit the export of items that may be used for the surreptitious interception of wire, oral, or electronic communications, a license is required for all destinations, including Canada, for ECCNs having an ''SL'' under the ''Reason for Control'' paragraph. These items include any electronic, mechanical, or other device primarily useful for the surreptitious interception of wire, oral, or electronic communications (ECCNs 5A001.f.1 and 5A980); and for related ''software'' primarily useful for the surreptitious interception of wire, oral, or electronic communications (ECCN 5D001.c and 5D980.a); and ''software'' primarily useful for the ''development'', ''production'', or ''use'' of devices controlled under ECCNs 5A001.f.1 and 5A980 (ECCNs 5D001.a and 5D980.b); and for ''technology'' primarily useful for the ''development'', ''production'', or ''use'' of items controlled by ECCNs 5A001.f.1, 5D001.a (for 5A001.f.1), 5A980 and 5D980 (ECCNs 5E001.a and 5E980); and for ''software'' primarily useful to support such ECCN 5E001.a ''development'', ''production'', or ''use'' ''technology'' for 5A001.f.1 equipment and certain 5D001.a ''software'' (ECCN 5D001.b). These licensing requirements

do not supersede the requirements contained in the Omnibus Crime Control and Safe Streets Act of 1968, as amended (18 U.S.C. 2512). This license requirement is not reflected on the Commerce Country Chart (Supplement No. 1 to Part 738 of the EAR).

* * * * *

■ 8. Section 742.15 is amended by revising paragraph (d) to read as follows:

§ 742.15 Encryption items.

* * * * *

(d) *Grandfathering.* (1) For mass market encryption commodities, software and components described in (or otherwise meeting the specifications of) paragraph (b) of this section effective June 25, 2010, such items reviewed and classified by BIS as mass market products prior to June 25, 2010 are authorized for export and reexport under paragraph (b) of this section using the CCATS previously issued by BIS, without any encryption registration (i.e., the information described in Supplement No. 5 to this part), new classification by BIS, or self-classification reporting (i.e., the information described in Supplement No. 8 to this part), provided the cryptographic functionality of the item has not changed. See paragraph (b)(7)(i)(C) of this section regarding changes in encryption functionality following a previous classification.

(2) If you have components that meet paragraph (b) of the Cryptography Note 3 in Category 5 Part 2 of the Commerce Control List in Supplement No. 1 to part 774 and the components have previously been classified under ECCN 5X002 pursuant to § 740.17(b)(3) or self-classified under § 740.17(b)(1) after June 25, 2010, a new classification request is not required to make it eligible for paragraph (b) to Note 3 under § 742.15(b)(3), i.e., 5X992, if you include these components in your self-classification report submitted to BIS and the ENC Encryption Request Coordinator no later than February 1 following the calendar year in which you first export or reexport the reclassified components.

PART 743 [AMENDED]

■ 9. The authority citation for part 743 is 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; E.O. 13637 of March 8, 2013, 78 FR 16129 (March 13, 2013); Notice of August 15, 2012, 77 FR 49699 (August 16, 2012).

■ 10. Section 743.1 is amended by revising the Note to paragraph (c)(1)(ii) to read as follows:

§ 743.1 Wassenaar Arrangement.

* * * * *

(c) * * *

(1) * * *

(ii) * * *

Note to Paragraph (c)(1)(ii): *Reports for 2D001, 2E001 and 2E002* are for equipment as follows:

a. Machine tools for turning having all of the following:

1. Positioning accuracy with ''all compensations available'' equal to or less (better) than 3 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis; and

2. Two or more axes which can be coordinated simultaneously for ''contouring control''.

b. Machine tools for milling having any of the following:

1. Having all of the following:

i. Positioning accuracy with ''all compensations available'' equal to or less (better) than 3 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis; and

ii. Three linear axes plus one rotary axis which can be coordinated simultaneously for ''contouring control'';

2. Specified by 2B001.b.2.a, 2B001.b.2.b or 2B001.b.2.c and having a positioning accuracy with ''all compensations available'' equal to or less (better) than 3 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis; or

3. A positioning accuracy for jig boring machines, with ''all compensations available'', equal to or less (better) than 3 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis;

c. Electrical discharge machines (EDM) as specified in 2B001.d.

d. Deep-hole-drilling machines as specified in 2B001.f.

e. ''Numerically controlled'' or manual machine tools as specified in 2B003.

* * * * *

PART 746 [AMENDED]

■ 11. The authority citation for Part 746 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. 287c; Sec 1503, Pub. L. 108–11, 117 Stat. 559; 22 U.S.C. 6004; 22 U.S.C. 7201 *et seq.;* 22 U.S.C. 7210; E.O. 12854, 58 FR 36587, 3 CFR, 1993 Comp., p. 614; E.O. 12918, 59 FR 28205, 3 CFR, 1994 Comp., p. 899; E.O. 13222, 3 CFR, 2001 Comp., p. 783; E.O. 13338, 69 FR 26751, 3 CFR, 2004 Comp., p 168; Presidential Determination 2003–23 of May 7, 2003, 68 FR 26459, May 16, 2003; Presidential Determination 2007–7 of December 7, 2006, 72 FR 1899 (January 16, 2007); Notice of May 9, 2012, 77 FR 27559 (May 10, 2012); Notice of August 15, 2012, 77 FR 49699 (August 16, 2012).

■ 12. Section 746.7 is amended by revising paragraph (a)(1) to read as follows:

§ 746.7 Iran.

* * * * *

(a) *License Requirements*—(1) *EAR license requirements.* A license is required under the EAR to export or reexport to Iran any item on the CCL containing a CB Column 1, CB Column 2, CB Column 3, NP Column 1, NP Column 2, NS Column 1, NS Column 2, MT Column 1, RS Column 1, RS Column 2, CC Column 1, CC Column 2, CC Column 3, AT Column 1 or AT Column 2 in the Country Chart Column of the License Requirements section of an ECCN or classified under ECCNs 0A980, 0A982, 0A983, 0A985, 0E982, 1C355, 1C395, 1C980, 1C981, 1C982, 1C983, 1C984, 2A994, 2D994, 2E994, 5A001.f.1, 5A980, 5D001 (for 5A001.f.1or for 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1))), 5D980, 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1)) or 5E980.

* * * * *

PART 752 [AMENDED]

■ 13. The authority citation for Part 752 continues to read as follows:

Authority: 50 U.S.C. app. 2401 *et seq.;* 50 U.S.C. 1701 *et seq.;* E.O. 13020, 61 FR 54079, 3 CFR, 1996 Comp., p. 219; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 15, 2012, 77 FR 49699 (August 16, 2012).

■ 14. Section 752.3 is amended by revising paragraph (a)(7) to read as follows:

§ 752.3 Eligible items.

(a) * * *

(7) Communications intercepting devices and related software and technology controlled by ECCNs 5A001.f.1, 5A980, 5D001 (for 5A001.f.1 or for 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1))), 5D980, 5E001.a (for 5A001.f.1, or for 5D001.a (for 5A001.f.1)) or 5E980 on the CCL;

* * * * *

PART 770 [AMENDED]

■ 15. The authority citation for Part 770 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 15, 2012, 77 FR 49699 (August 16, 2012).

■ 16. Section 770.2 is amended by revising paragraph (h) to read as follows:

§ 770.2 Item Interpretations.

* * * * *

(h) *Interpretation 8: Ground vehicles.* (1) The U.S. Department of Commerce, Bureau of Industry and Security has export licensing jurisdiction over ground transport vehicles (including trailers), parts, and components therefor specially designed or modified for non-combat military use. Vehicles in this category are primarily transport vehicles designed or modified for transporting cargo, personnel and/or equipment, or to move other vehicles and equipment over land and roads in close support of fighting vehicles and troops. The U.S. Department of Commerce, Bureau of Industry and Security also has export licensing jurisdiction over vehicles specified in 9A018.b.2, if they do not have armor described in 22 CFR 121, Category XIII. In this section, and in ECCN 9A018, the word ''unarmed'' means not having weapons installed, not having mountings for weapons installed, and not having special reinforcements for mountings for weapons.

(2) Modification of a ground vehicle for military use entails a structural, electrical or mechanical change involving one or more specially designed military components. Such components include, but are not limited to:

(i) Pneumatic tire casings of a kind designed to be bullet-proof or to run when deflated;

(ii) Tire inflation pressure control systems, operated from inside a moving vehicle;

(iii) Armored protection of vital parts, (e.g., fuel tanks or vehicle cabs); and

(iv) Special reinforcements for mountings for weapons.

(3) Scope of ECCN 9A018.b: Ground transport vehicles (including trailers) and parts and components therefor specially designed or modified for non-combat military use are controlled by ECCN 9A018.b.1. Unarmed vehicles specified in 9A018.b.2 that are not described in paragraph (h)(4) of this section. ECCN 9A018.b does not cover civil vehicles designed or modified for transporting money or valuables even if such vehicles incorporate items described in paragraphs (h)(2)(i), (ii), or (iii) of this section. Ground vehicles that are not described in paragraph (h)(4) of this section and that are not covered by either ECCN 9A018.b or 9A990 are EAR99, meaning that they are subject to the EAR, but not listed in any specific ECCN.

(4) Related control: The Department of State, Directorate of Defense Trade Controls has export licensing jurisdiction for all military ground armed or armored vehicles and parts and components specific thereto as described in 22 CFR part 121, Category VII. The Department of State, Directorate of Defense Trade Controls also has export licensing jurisdiction for all-wheel drive vehicles capable of off-road use that have been armed or armored with articles described in 22 CFR part 121 or that have been manufactured or fitted with special reinforcements for mounting arms or other specialized military equipment described in 22 CFR part 121.

* * * * *

PART 772 [AMENDED]

■ 17. 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 15, 2012, 77 FR 49699 (August 16, 2012).

■ 18. Section 772.1 is amended by:

■ a. Revising the definitions for ''diffusion bonding,'' ''personal area network,'' ''real-time bandwidth,'' ''space-qualified'';

■ b. Removing the definition ''dynamic signal analyzers;''

■ c. Adding a definition for ''frequency mask trigger'';

■ d. Removing ''(Cat 9)'' and adding in its place ''(GSN)'' in the definition of ''object code;'' and

■ e. Removing ''(Cat 6)'' and adding in its place ''(Cat 3 and 6)'' in the definition of ''substrate blanks''.

The revisions and addition read as follows:

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

* * * * *

Diffusion bonding. (Cat 1, 2, and 9)—A solid state joining of at least two separate pieces of metals into a single piece with a joint strength equivalent to that of the weakest material, wherein the principal mechanism is interdiffusion of atoms across the interface.

* * * * *

Frequency mask trigger. (Cat 3)—For ''signal analyzers'' a mechanism where the trigger function is able to select a frequency range to be triggered on as a subset of the acquisition bandwidth while ignoring other signals that may also be present within the same acquisition bandwidth. A ''frequency mask trigger'' may contain more than one independent set of limits.

* * * * *

Personal area network. (Cat 5 Part 2)—A data communication system having all of the following characteristics:

(a) Allows an arbitrary number of independent or interconnected 'data devices' to communicate directly with each other; and

(b) Is confined to the communication between devices within the immediate vicinity of an individual person or device controller (e.g., single room, office, or automobile, and their nearby surrounding spaces).

Technical Note: 'Data device' means equipment capable of transmitting or receiving sequences of digital information.

* * * * *

Real time bandwidth. (Cat 3)—For ''signal analyzers'', the widest frequency range for which the analyzer can continuously transform time domain data entirely into frequency-domain results, using Fourier or other discrete time transform that processes every incoming time point without gaps or windowing effects that causes a reduction of measured amplitude of more than 3 dB below the actual signal amplitude, while outputting or displaying the transformed data.

* * * * *

Space-qualified. (Cat 3 and 6)—Designed, manufactured, or qualified through successful testing, for operation at altitudes greater than 100 km above the surface of the Earth.

Note: A determination that a specific item is ''space qualified'' by virtue of testing does not mean that other items in the same production run or model series are ''space qualified'' if not individually tested.

* * * * *

PART 774 [AMENDED]

■ 19. 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 15, 2012, 77 FR 49699 (August 16, 2012).

■ 20. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1, ECCN 1A004 is amended by:

■ a. Revising the introductory paragraph .a of the Items paragraph in the List of Items Controlled section; and

■ b. Revising the Note at the end of the Items paragraph in the List of Items Controlled section, to read as follows:

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

* * * * *

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:

a. Full face masks, filter canisters and decontamination equipment therefor, designed or modified for defense against any of the following, and specially designed components therefor:

Note: *1A004.a includes Powered Air Purifying Respirators (PAPR) that are designed or modified for defense against agents or materials, listed in 1A004.a.*

Technical Note: *For the purpose of 1A004.a, full face masks are also known as gas masks.*

* * * * *

Note: *1A004 does not control:*

a. Personal radiation monitoring dosimeters;

b. Occupational health or safety 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.

* * * * *

■ 21. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1, ECCN 1C001 is amended by revising paragraphs .b and .c in the Items paragraph of the List of Items Controlled section to read as follows:

1C001 Materials specially designed for use as absorbers of electromagnetic waves, or intrinsically conductive polymers, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

* * * * *

Items:

* * * * *

b. Materials for absorbing frequencies exceeding 1.5×10^{14} Hz but less than 3.7×10^{14} Hz and not transparent to visible light;

Note: *1C001.b does not apply to materials, specially designed or formulated for any of the following applications:*

a. Laser marking of polymers; or

b. Laser welding of polymers.

c. Intrinsically conductive polymeric materials with a 'bulk electrical conductivity' exceeding 10,000 S/m (Siemens per meter) or a 'sheet (surface) resistivity' of less than 100 ohms/square, based on any of the following polymers:

c.1. Polyaniline;

c.2. Polypyrrole;

c.3. Polythiophene;

c.4. Poly phenylene-vinylene; *or*

c.5. Poly thienylene-vinylene.

Note: *1C001.c does not apply to materials in a liquid form.*

Technical Note: *'Bulk electrical conductivity' and 'sheet (surface) resistivity' should be determined using ASTM D–257 or national equivalents.*

■ 22. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2B001 is amended by:

■ a. Revising the Header;

■ b. Revising the Unit paragraph in the List of Items Controlled section;

■ c. Revising Note 2 of the Items paragraph in the List of Items Controlled section;

■ d. Revising paragraphs .a.1, .b, and .f in the Items paragraph in the List of Items Controlled section, 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''; as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Machine tools in number

Related Controls: * * *

Related Definitions: * * *

Items:

* * * * *

Note 2: *2B001 does not control special purpose machine tools limited to the manufacture of any of the following:*

a. Crank shafts or cam shafts;

b. Tools or cutters;

c. Extruder worms;

d. Engraved or faceted jewelry parts; or

e. Dental prostheses.

* * * * *

a. * * *

a.1. Positioning accuracy with ''all compensations available'' equal to or less (better) than 3.0 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis; *and*

* * * * *

b. Machine tools for milling having any of the following:

b.1. Having all of the following:

b.1.a. Positioning accuracy with ''all compensations available'' equal to or less (better) than 3 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis; *and*

b.1.b. Three linear axes plus one rotary axis which can be coordinated simultaneously for ''contouring control'';

b.2. Five or more axes which can be coordinated simultaneously for ''contouring control'' having any of the following:

Note: *'Parallel mechanism machine tools' are specified by 2B001.b.2.d.*

b.2.a. Positioning accuracy with ''all compensations available'' equal to or less (better) than 3.0 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis with a travel length less than 1 m;

b.2.b. Positioning accuracy with ''all compensations available'' equal to or less (better) than 4.5 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis with a travel length equal to or greater than 1 m and less than 2 m;

b.2.c. Positioning accuracy with ''all compensations available'' equal to or less (better) than 4.5 + 7x(L–2) μm (L is the travel length in meters) according to ISO 230/2 (2006) or national equivalents along one or more linear axis with a travel length equal to or greater than 2 m; *or*

b.2.d. Being a 'parallel mechanism machine tool';

Technical Note: *A 'parallel mechanism machine tool' is a machine tool having multiple rods which are linked with a platform and actuators; each of the actuators operates the respective rod simultaneously and independently.*

b.3. A positioning accuracy for jig boring machines, with ''all compensations available'', equal to or less (better) than 3.0 μm according to ISO 230/2 (2006) or national equivalents along one or more linear axis; *or*

b.4. Fly cutting machines having all of the following:

b.4.a. Spindle ''run-out'' and ''camming'' less (better) than 0.0004 mm TIR; *and*

b.4.b. Angular deviation of slide movement (yaw, pitch and roll) less (better) than 2 seconds of arc, TIR, over 300 mm of travel;

* * * * *

f. Deep-hole-drilling machines and turning machines modified for deep-hole-drilling, having a maximum depth-of-bore capability exceeding 5 m.

■ 23. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2B006 is amended by revising paragraph .b and .c in the Items paragraph of the List of Items Controlled section, to read as follows:

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

* * * * *

List of Items Controlled

* * * * *

Items:

* * * * *

b. Linear and angular displacement measuring instruments, as follows:

b.1. 'Linear displacement' measuring instruments having any of the following:

Note: *Displacement measuring ''laser'' interferometers are only specified by 2B006.b.1.c.*

Technical Note: *For the purpose of 2B006.b.1 'linear displacement' means the change of distance between the measuring probe and the measured object.*

b.1.a. Non-contact type measuring systems with a ''resolution'' equal to or less (better) than 0.2 μm within a measuring range up to 0.2 mm;

b.1.b. Linear voltage differential transformer systems having all of the following:

b.1.b.1. ''Linearity'' equal to or less (better) than 0.1% within a measuring range up to 5 mm; *and*

b.1.b.2. Drift equal to or less (better) than 0.1% per day at a standard ambient test room temperature ± 1 K;

b.1.c. Measuring systems having all of the following:

b.1.c.1. Containing a ''laser''; *and*

b.1.c.2. Maintaining, for at least 12 hours, at a temperature of 20 ± 1 °C, all of the following:

b.1.c.2.a. A ''resolution'' over their full scale of 0.1 μm or less (better); *and*

b.1.c.2.b. Capable of achieving a ''measurement uncertainty'', when compensated for the refractive index of air, equal to or less (better) than (0.2 + L/2,000) μm (L is the measured length in mm); or

b.1.d. ''Electronic assemblies'' specially designed to provide feedback capability in systems controlled by 2B006.b.1.c;

Note: *2B006.b.1 does not control measuring interferometer systems, with an automatic control system that is designed to use no feedback techniques, containing a ''laser'' to measure slide movement errors of machine-tools, dimensional inspection machines or similar equipment.*

b.2. Angular displacement measuring instruments having an ''angular position deviation'' equal to or less (better) than 0.00025°;

Note: *2B006.b.2 does not control optical instruments, such as autocollimators, using collimated light (e.g., laser light) to detect angular displacement of a mirror.*

c. Equipment for measuring surface roughness (including surface defects), by measuring optical scatter with a sensitivity of 0.5 nm or less (better).

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.*

■ 24. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2D001 is amended by revising the Heading and the Items paragraph of the List of Items Controlled section, to read as follows:

2D001 ''Software'', other than that controlled by 2D002, as follows (See list of Items Controlled).

* * * * *

List of Items Controlled

* * * * *

Items:

a. ''Software'' specially designed or modified for the ''development'' or ''production'' of equipment controlled by 2A001 or 2B001 to 2B009;

b. ''Software'' specially designed or modified for the ''use'' of equipment specified by 2A001.c., 2B001, or 2B003 to 2B009.

Note: *2D001 does not apply to part programming ''software'' that generates ''numerical control'' codes for machining various parts.*

■ 25. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2D002 is amended by revising the Items paragraph of the List of Items Controlled section to read as follows:

2D002 ''Software'' for electronic devices, even when residing in an electronic device or system, enabling such devices or systems to function as a ''numerical control'' unit, capable of coordinating simultaneously more than 4 axes for ''contouring control''.

* * * * *

List of Items Controlled

* * * * *

Items:

Note 1: *2D002 does not control ''software'' specially designed or modified for the operation of machine tools not specified by Category 2.*

Note 2: *2D002 does not control ''software'' for items specified by 2B002. See 2D001 and 2D003 for ''software'' for items specified by 2B002.*

Note 3: *2D002 does not apply to ''software'' that is exported with, and the minimum necessary for the operation of, machine tools not specified by Category 2.*

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

■ 26. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2, ECCN 2D003 is added after 2D002 to read as follows:

2D003 ''Software'', designed or modified for the operation of equipment specified by 2B002, that converts optical design, workpiece measurements and material removal functions into ''numerical control'' commands to achieve the desired workpiece form.

License Requirements

Reason for Control: NS, AT

Control(s)	*Country chart*
NS applies to entire entry.	NS Column 2.
AT applies to entire entry.	AT Column 1.

License Exceptions

CIV: N/A

TSR: Yes

List of Items Controlled

Unit: $ value

Related Controls: See ECCN *2E001* (''development'') for technology for ''software'' controlled under this entry.

Related Definitions: N/A

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

■ 27. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3, ECCN 3A001 is amended by revising paragraphs a.7, b.2, b.4.f.3, b.10, and 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).

* * * * *

List of Items Controlled

* * * * *

Items:

a. * * *

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

a.7.a. A maximum number of single-ended digital input/outputs of 500 or greater; *or*

a.7.b. An 'aggregate one-way peak serial transceiver data rate' or 200 Gb/s or greater;

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

—*Simple Programmable Logic Devices (SPLDs)*

—*Complex Programmable Logic Devices (CPLDs)*

—*Field Programmable Gate Arrays (FPGAs)*

—*Field Programmable Logic Arrays (FPLAs)*

—*Field Programmable Interconnects (FPICs)*

Technical Notes:

1. 'Field programmable logic devices' are also known as field programmable gate or field programmable logic arrays.

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

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

* * * * *

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 GHz and with an average output power greater than 0.1 nW (−70 dBm);

b.2.e. Rated for operation at frequencies exceeding 37 GHz up to and including 43.5 GHz and with an average output power greater than 1.0 W (30 dBm) ;

b.2.f. Rated for operation at frequencies exceeding 43.5 GHz up to and including 75 GHz and with an average output power greater than 31.62 mW (15 dBm) with a ''fractional bandwidth'' greater than 10%;

b.2.g. Rated for operation at frequencies exceeding 75 GHz up to and including 90 GHz and with an average output power greater than 10 mW (10 dBm) with a ''fractional bandwidth'' greater than 5%; *or*

b.2.h. Rated for operation at frequencies exceeding 90 GHz and with an average output power greater than 0.1 nW (−70 dBm).

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.4. * * *

b.4.f. * * *

b.4.f.3. Any two sides perpendicular to one another with either length d (in cm) equal to or less than 15 divided by the lowest operating frequency in GHz [d ≤ 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≤15cm*GHz/3.2 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.*

Note 3: *3A001.b.4 includes transmit/receive modules and transmit modules.*

* * * * *

b.10. Oscillators or oscillator assemblies, specified to operate with all of the following:

b.10.a. A single sideband (SSB) phase noise, in dBc/Hz, better than −(126+20 $\log_{10}$F−20 $\log_{10}$f) anywhere within the range of 10 Hz <F<10 kHz; *and*

b.10.b. A single sideband (SSB) phase noise, in dBc/Hz, better than −(114+20 $\log_{10}$F−20 $\log_{10}$f) anywhere within the range of 10 kHz < F < 500 kHz;

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

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

b.11.a. Less than 156 ps;

b.11.b. Less than 100 μs for any frequency change exceeding 1.6 GHz within the synthesized frequency range exceeding 4.8 GHz but not exceeding 10.6 GHz;

b.11.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;

b.11.d. Less than 500 μs for any frequency change exceeding 550 MHz within the synthesized frequency range exceeding 31.8 GHz but not exceeding 43.5 GHz; *or*

b.11.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;

b.11.f. Less than 1 ms for any frequency change exceeding 2.2 GHz within the synthesized frequency range exceeding 56 GHz but not exceeding 75 GHz; *or*

b.11.g. Less than 1 ms within the synthesized frequency range exceeding 75 GHz;

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

* * * * *

■ 28. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3, ECCN 3A002 is amended by revising paragraphs .c, .d, .e, and .f in the Items paragraph of the List of Items Controlled section, 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 75 GHz;

c.3. ''Signal analyzers''having a frequency exceeding 75 GHz;

c.4. ''Signal analyzers'' having all of the following:

c.4.a. ''Real-time bandwidth'' exceeding 85 MHz; *and*

c.4.b. 100% probability of discovery with less than a 3 dB reduction from full amplitude due to gaps or windowing effects of signals having a duration of 15 μs or less;

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

Technical Notes:

1. Probability of discovery in 3A002.c.4.b is also referred to as probability of intercept or probability of capture.

2. For the purposes of 3A002.c.4.b, the duration for 100% probability of discovery is equivalent to the minimum signal duration necessary for the specified level measurement uncertainty.

c.5. ''Signal analyzers'' having a ''frequency mask trigger'' function with 100% probability of trigger (capture) for signals having a duration of 15 μs or less;

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 pulses having all of the following, anywhere within the synthesized frequency range exceeding 31.8 GHz but not exceeding 75 GHz:

d.1.a. 'Pulse duration' of less than 100 ns; *and*

d.1.b. On/off ratio equal to or exceeding 65 dB;

d.2. An output power exceeding 100 mW (20 dBm) anywhere within the synthesized frequency range exceeding 43.5 GHz but not exceeding 75 GHz;

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

d.3.a. [RESERVED];

d.3.b. Less than 100 μs for any frequency change exceeding 1.6 GHz within the synthesized frequency range exceeding 4.8 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 75 GHz;

d.4. Single sideband (SSB) phase noise, in dBc/Hz, specified as being all of the following:

d.4.a. Less (better) than—(126+20 $\log_{10}$ F−20 $\log_{10}$f) for anywhere within the range of 10 Hz F<10 kHz anywhere within the synthesized frequency range exceeding 3.2 GHz but not exceeding 75 GHz; *and*

d.4.b. Less (better) than—(114+20 $\log_{10}$ F−20 $\log_{10}$f) for anywhere within the range of 10 kHz F< 500 kHz anywhere within the synthesized frequency range exceeding 3.2 GHz but not exceeding 75 GHz; *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 75 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. The maximum synthesized frequency of an arbitrary waveform or function generator is calculated by dividing the sample rate, in samples/second, by a factor of 2.5.

2. For the purposes of 3A002.d.1.a, '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.

e. Network analyzers having any of the following:

e.1. An output power exceeding 31.62 mW (15 dBm) anywhere within the operating frequency range exceeding 43.5 GHz but not exceeding 75 GHz;

e.2. An output power exceeding 1 mW (0 dBm) anywhere within the operating

frequency range exceeding 75 GHz but not exceeding 110 GHz;

e.3. 'Nonlinear vector measurement functionality' at frequencies exceeding 50 GHz but not exceeding 110 GHz; *or*

Technical Note: *'Nonlinear vector measurement functionality' is an instrument's ability to analyze the test results of devices driven into the large-signal domain or the non-linear distortion range.*

e.4. A maximum operating frequency exceeding 110 GHz;

f. Microwave test receivers having all of the following:

f.1. Maximum operating frequency exceeding 110 GHz; *and*

f.2. Being capable of measuring amplitude and phase simultaneously;

* * * * *

■ 29. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3, ECCN 3B001 is amended by revising paragraphs .a, .b and .h in the Items paragraphs of the List of Items Controlled section, 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:

a. Equipment designed for epitaxial growth as follows:

a.1. Equipment capable of producing a layer of any material other than silicon with a thickness uniform to less than ± 2.5% across a distance of 75 mm or more;

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

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

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

b. Equipment designed for ion implantation and having any of the following:

b.1. [RESERVED];

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

b.3. Direct write capability;

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

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

* * * * *

h. Multi-layer masks with a phase shift layer not specified by 3B001.g and having any of the following:

h.1. Made on a mask ''substrate blank'' from glass specified as having less than 7 nm/cm birefringence; *or*

h.2. Designed to be used by lithography equipment having a light source wavelength less than 245 nm;

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

* * * * *

■ 30. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3, ECCN 3C002 is amended by:

■ a. Revising the GBS and CIV paragraphs of the License Exceptions section; and

■ b. Revising the Related Definitions and Items paragraphs in the List of Items Controlled section, to read as follows:

3C002 Resist materials as follows (see List of Items Controlled) and ''substrates'' coated with the following resists.

* * * * *

License Exceptions

LVS: * * *

GBS: Yes for 3C002.a provided that they are not also controlled by 3C002.b through .e.

CIV: Yes for 3C002.a provided that they are not also controlled by 3C002.b through .e.

List of Items Controlled

Unit: * * *

Related Controls: * * *

Related Definitions: N/A

Items:

a. Resists designed for semiconductor lithography as follows:

a.1. Positive resists adjusted (optimized) for use at wavelengths less than 245 nm but equal to or greater than 15 nm;

a.2. Resists adjusted (optimized) for use at wavelengths less than 15 nm but greater than 1 nm;

b. All resists designed for use with electron beams or ion beams, with a sensitivity of 0.01 μcoulomb/mm^2 or better;

c. [RESERVED]

d. All resists optimized for surface imaging technologies;

e. All resists designed or optimized for use with imprint lithography equipment specified by 3B001.f.2 that use either a thermal or photo-curable process.

■ 31. Supplement No. 1 to Part 774 (the Commerce Control List), Category 4, ECCN 4D001 is amended by revising paragraph .a in the Items paragraph of the List of Items Controlled section, to read as follows:

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

* * * * *

List of Items Controlled

* * * * *

Items:

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

* * * * *

■ 32. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 1, ECCN 5A001 is amended by:

■ a. Revising the License Requirements section;

■ b. Revising the LVS paragraph in the License Exception section; and

■ c. Revising paragraphs .f, .h, and .i in the Items paragraph of the List of Items Controlled, to read as follows:

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*
NS applies to 5A001.a, .e, .b.5, f.3 and .h..	NS Column 1
NS applies to 5A001.b (except .b.5), .c, .d, .f (except f.3), and .g..	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

License Requirement Notes: *See § 743.1 of the EAR for reporting requirements for exports under License Exceptions. See § 740.2(a)(3) of the EAR for restrictions on the use of License Exceptions for 5A001.f.1.*

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.

* * * * *

List of Items Controlled

* * * * *

Items:

* * * * *

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 also5A980 and the U.S. Munitions List (22 CFR part 121).

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

* * * * *

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.

■ 33. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 1, ECCN 5A980 is amended by revising the Heading and the List of Items Controlled section, to read as follows:

5A980 Devices primarily useful for the surreptitious interception of wire, oral, or electronic communications, other than those controlled under 5A001.f.1; and parts and accessories therefor.

* * * * *

List of Items Controlled

Unit: $ value.

Related Controls: (1) See ECCN 5A001.f.1 for systems or equipment, specially designed or modified to intercept and process the air interface of 'mobile telecommunications', and specially designed components therefor. (2) See ECCN 5D980 for ''software'' for the ''development'', ''production'' or ''use'' of equipment controlled by 5A980. (3) See ECCN 5E980 for the ''technology'' for the ''development'', ''production'', and ''use'' of equipment controlled by 5A980.

Related Definitions: N/A

Items:

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

■ 34. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 1, ECCN 5B001 is amended by:

■ a. Revising the STA paragraph in the License Exception section; and

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

5B001 Telecommunication test, inspection and production equipment, components and accessories, as follows (See List of Items Controlled).

* * * * *

License Exceptions

* * * * *

STA: License Exception STA may not be used to ship 5B001.a equipment and specially designed components or accessories therefor, specially designed for the ''development'' or ''production'' of equipment, functions or features specified by in ECCN 5A001.b.3, .b.5 or .h to any of the eight destinations listed in § 740.20(c)(2) of the EAR.

List of Items Controlled

* * * * *

Items:

a. Equipment and specially designed components or accessories therefor, specially designed for the ''development'' or ''production'' of equipment, functions or features, controlled by 5A001;

Note: *5B001.a does not apply to optical fiber characterization equipment.*

* * * * *

■ 35. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 1, ECCN 5D001 is amended by revising the License Requirements section to read as follows:

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

License Requirements

Reason for Control: NS, SL, AT

Control(s)	Country chart
NS applies to entire entry.	NS Column 1.
SL applies to the entire entry as applicable for equipment, functions, features, or characteristics controlled by 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.

License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions. See § 740.2(a)(3) of the EAR for restrictions on the use of License Exceptions for 5D001 (as it applies to 5A001.f.1 or 5E001.a (as it applies to 5A001.f.1 or 5D001.a (as it applies to 5A001.f.1))).

* * * * *

■ 36. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 1, ECCN 5D980 is amended by revising the Heading and the Related Controls paragraph in the List of Items Controlled Section, to read as follows:

5D980 Other ''software'', other than that controlled by 5D001 (for the equipment, functions, features, or characteristics controlled by 5A001. f.1, or to support certain ''technology'' controlled by 5E001.a), as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: See also 5D001.a and .c for software controls for equipment, functions, features or characteristics controlled by 5A001.f.1 and also 5D001.b for controls on ''software'' specially designed or modified to support ''technology'' controlled by 5E001.a (for 5A001.f.1 equipment, functions or features, and for 5D001.a ''software'' for 5A001.f.1 equipment). See 5E980 for ''technology'' for the ''development'', ''production'', and ''use'' of equipment controlled by 5A980 or ''software'' controlled by 5D980.

Related Definitions: * * *

Items: * * *

■ 37. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 1, ECCN 5E001 is amended by:

■ a. Revising the License Requirements section; and

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

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

License Requirements

Reason for Control: NS, SL, AT

Control(s)	Country chart
NS applies to entire entry.	NS Column 1.
SL applies to ''technology'' for the ''development'' or ''production'' of equipment, functions or features controlled by 5A001.f.1, or for the ''development'' or ''production'' of ''software'' controlled by ECCN 5D001.a (for 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.

License Requirement Notes: *See § 743.1 of the EAR for reporting requirements for exports under License Exceptions. See § 740.2(a)(3) of the EAR for restrictions on the use of License Exceptions for 5E001.a (as it applies to 5A001.f.1 or 5D001.a (as it applies to 5A001.f.1))).*

* * * * *

List of Items Controlled

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Items:

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d. ''Technology'' according to the General Technology Note for the ''development'' or ''production'' of Microwave Monolithic Integrated Circuit (MMIC) power amplifiers specially designed for telecommunications and having any of the following:

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%;

d.3. Rated for operation at frequencies exceeding 16 GHz up to and including 31.8 GHz and with an average output power greater than 0.8 W (29 dBm) with a ''fractional bandwidth'' greater than 10%;

d.4. Rated for operation at frequencies exceeding 31.8 GHz up to and including 37 GHz and with an average output power greater than 0.1 nW (−70 dBm);

d.5. Rated for operation at frequencies exceeding 37 GHz up to and including 43.5 GHz and with an average output power greater than 1.0 W (30 dBm);

d.6. Rated for operation at frequencies exceeding 43.5 GHz up to and including 75 GHz and with an average output power greater than 31.62 mW (15 dBm) with a ''fractional bandwidth'' greater than 10%;

d.7. Rated for operation at frequencies exceeding 75 GHz up to and including 90 GHz and with an average output power greater than 10 mW (10 dBm) with a ''fractional bandwidth'' greater than 5%; *or*

d.8. Rated for operation at frequencies exceeding 90 GHz and with an average output power greater than 0.1 nW (−70 dBm);

* * * * *

■ 38. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 1, ECCN 5E980 is amended by revising the Heading and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

5E980 ''Technology'', other than that controlled by 5E001.a (for 5A001.,f.1 and for 5D001.a (for 5A001.f.1)), primarily useful for the ''development'', ''production'', or ''use'' of equipment, functions or features, of equipment controlled by 5A980 or ''software'' controlled by 5D980.

* * * * *

List of Items Controlled

* * * * *

Related Controls: See also 5D001.a and .c (for 5A001.f.1 equipment), 5D001.b (supporting 5E001.a ''technology'' for 5A001.f.1 equipment, or for 5D001.a ''software'' (for 5A001.f.1equipment)), and 5E001.a (for 5A001.f.1 equipment, or for 5D001.a ''software'' for 5A001.f.1 equipment).

* * * * *

■ 39. Supplement No. 1 to part 774, Category 5, Part 2 is amended by revising Note 3 to read as follows:

CATEGORY 5—TELECOMMUNICATIONS AND ''INFORMATION SECURITY''

Part 2—''INFORMATION SECURITY''

* * * * *

Note 3: *Cryptography Note: ECCNs 5A002 and 5D002 do not control items as follows:*

a. Items meeting all of the following:

1. Generally available to the public by being sold, without restriction, from stock at retail selling points by means of any of the following:

a. Over-the-counter transactions;

b. Mail order transactions;

c. Electronic transactions; or

d. Telephone call transactions;

2. The cryptographic functionality cannot be easily changed by the user;

3. Designed for installation by the user without further substantial support by the supplier; and

4. [RESERVED]

5. When necessary, details of the items are accessible and will be provided, upon request, to the appropriate authority in the exporter's country in order to ascertain compliance with conditions described in paragraphs 1. through 3. of this Note a.;

b. Hardware components of existing items described in paragraph a. of this Note, that have been designed for these existing items, meeting all of the following:

1. ''Information security'' is not the primary function or set of functions of the component;

2. The component does not change any cryptographic functionality of the existing items, or add new cryptographic functionality to the existing items;

3. The feature set of the component is fixed and is not designed or modified to customer specification; and

4. When necessary, as determined by the appropriate authority in the exporter's country, details of the component and relevant end-items are accessible and will be provided to the authority upon request, in order to ascertain compliance with conditions described above.

Note to the Cryptography Note:

1. To meet paragraph a. of Note 3, all of the following must apply:

a. The item is of potential interest to a wide range of individuals and businesses; and

b. The price and information about the main functionality of the item are available before purchase without the need to consult the vendor or supplier.

2. In determining eligibility of paragraph a. of Note 3, BIS may take into account relevant factors such as quantity, price, required technical skill, existing sales channels, typical customers, typical use or any exclusionary practices of the supplier.

N.B. to Note 3 (Cryptography Note): *You must submit a classification request or encryption registration to BIS for mass market encryption commodities and software eligible for the Cryptography Note employing a key length greater than 64 bits for the symmetric algorithm (or, for commodities and software not implementing any symmetric algorithms, employing a key length greater than 768 bits for asymmetric algorithms or greater than 128 bits for elliptic curve algorithms) in accordance with the requirements of § 742.15(b) of the EAR in order to be released from the ''EI'' and ''NS'' controls of ECCN 5A002 or 5D002.*

■ 40. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 2, ECCN 5A002 is amended by:

■ a. Redesignating paragraphs (1) and (2) as (2) and (3) in the Related Controls paragraph in the List of Items Controlled Section, and adding a new paragraph (1) to read as set forth below;

■ b. Revising paragraphs (g) and (i) of the Note to the Items paragraph in the List of Items Controlled Section; and
■ c. Revising paragraph .a of the Items paragraph in 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).

* * * * *

List of Items Controlled

* * * * *

Related Controls: (1) ECCN 5A002.a controls ''components'' providing the means or functions necessary for ''information security.'' All such ''components'' are presumptively ''specially designed'' and controlled by 5A002.a. (2) *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 ECCN *5A992,* and related software and technology are classified under ECCNs *5D992* and *5E992* respectively. (3) After encryption registration to or classification by BIS, mass market encryption commodities that meet eligibility requirements are released from ''EI'' and ''NS'' controls. These commodities are classified under ECCN *5A992.c.* See § 742.15(b) of the EAR.

* * * * *

Items:

Note: * * *

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

* * * * *

(i) Wireless ''personal area network'' equipment that implement only published or commercial cryptographic standards and where the cryptographic capability is limited to a nominal operating range not exceeding 30 meters according to the manufacturer's specifications, or not exceeding 100 meters according to the manufacturer's specifications for equipment that cannot interconnect with more than seven devices; or

* * * * *

a. Systems, equipment, application specific ''electronic assemblies'', modules and integrated circuits for ''information security'', as follows, and components therefor specially designed for ''information security'':

N.B.: For the control of Global Navigation Satellite Systems (GNSS) receiving equipment containing or employing decryption, see ECCN 7A005.

a.1. Designed or modified to use ''cryptography'' employing digital techniques performing any cryptographic function other than authentication, digital signature, or execution of copy-protected ''software,'' and having any of the following:

Technical Notes:

1. Functions for authentication, digital signature and the execution of copy-protected ''software'' include their associated key management function.

2. Authentication includes all aspects of access control where there is no encryption of files or text except as directly related to the protection of passwords, Personal Identification Numbers (PINs) or similar data to prevent unauthorized access.

3. ''Cryptography'' does not include ''fixed'' data compression or coding techniques.

Note: *5A002.a.1 includes equipment designed or modified to use ''cryptography'' employing analog principles when implemented with digital techniques.*

a.1.a. A ''symmetric algorithm'' employing a key length in excess of 56-bits; or

a.1.b. An ''asymmetric algorithm'' where the security of the algorithm is based on any of the following:

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

a.1.b.2. Computation of discrete logarithms in a multiplicative group of a finite field of size greater than 512 bits (e.g., Diffie-Hellman over Z/pZ); or

a.1.b.3. Discrete logarithms in a group other than mentioned in 5A002.a.1.b.2 in excess of 112 bits (e.g., Diffie-Hellman over an elliptic curve);

a.2. Designed or modified to perform cryptanalytic functions;

Note: *5A002.a.2 includes systems or equipment, designed or modified to perform cryptanalysis by means of reverse engineering.*

a.3. [RESERVED]

a.4. Specially designed or modified to reduce the compromising emanations of information-bearing signals beyond what is necessary for health, safety or electromagnetic interference standards;

a.5. Designed or modified to use cryptographic techniques to generate the spreading code for ''spread spectrum'' systems, not controlled in 5A002.a.6., including the hopping code for ''frequency hopping'' systems;

a.6. Designed or modified to use cryptographic techniques to generate channelizing codes, scrambling codes or network identification codes, for systems using ultra-wideband modulation techniques and having any of the following:

a.6.a. A bandwidth exceeding 500 MHz; or

a.6.b. A ''fractional bandwidth'' of 20% or more;

a.7. Non-cryptographic information and communications technology (ICT) security systems and devices that have been evaluated and certified by a national authority to exceed class EAL–6 (evaluation assurance level) of the Common Criteria (CC) or equivalent;

a.8. Communications cable systems designed or modified using mechanical, electrical or electronic means to detect surreptitious intrusion;

Note: *5A002.a.8 applies only to physical layer security.*

a.9. Designed or modified to use 'quantum cryptography.'

Technical Notes:

1. 'Quantum cryptography' A family of techniques for the establishment of a shared key for ''cryptography'' by measuring the quantum-mechanical properties of a physical system (including those physical properties explicitly governed by quantum optics, quantum field theory, or quantum electrodynamics).

2. 'Quantum cryptography' is also known as Quantum Key Distribution (QKD).

* * * * *

■ 41. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 2, ECCN 5A992 is amended by revising the Items paragraph of the List of Items Controlled to read as follows:

5A992 Equipment not controlled by 5A002.

* * * * *

List of Items Controlled

* * * * *

Items:

a. Telecommunications and other information security equipment containing encryption.

b. ''Information security'' equipment, n.e.s., (e.g., cryptographic, cryptanalytic, and cryptologic equipment, n.e.s.) and components therefor.

Note: *5A992 does not control products with cryptographic functionality limited to copy protection.*

c. Commodities that BIS has received an encryption registration or that have been classified as mass market encryption commodities in accordance with § 742.15(b) of the EAR.

■ 42. Supplement No. 1 to Part 774 (the Commerce Control List), Category 5, Part 2, ECCN 5E002 is amended by revising the items paragraph of the List of Items Controlled section to read as follows:

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.

Note: *5E002 includes ''information security'' technical data resulting from procedures carried out to evaluate or determine the implementation of functions, features or techniques specified in Category 5, Part 2.*

■ 43. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6A001 is amended by revising

paragraphs a.1.a.2 and a.1.a.3 of the Items paragraph in the List of Items Controlled section to read as follows:

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

* * * * *

List of Items Controlled

* * * * *

Items:

a. * * *

a.1. * * *

a.1.a. * * *

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

Technical Note: *The acoustic sensor pressure rating determines the depth rating of the equipment specified by 6A001.a.1.a.2.*

a.1.a.2.a. Having all of the following:

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

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

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 assuming 100% coverage.*

a.1.a.2.b. Survey equipment, not specified by 6A001.a.1.a.2.a, having all of the following:

a.1.a.2.b.1. Designed or modified to operate at depths exceeding 100 m;

a.1.a.2.b.2. Designed to take measurements at an angle exceeding 20° from the vertical;

a.1.a.2.b.3. Having any of the following:

a.1.a.2.b.3.a. Operating frequency below 350 kHz; *or*

a.1.a.2.b.3.b. Designed to measure seabed topography at a range exceeding 200 m from the acoustic sensor; *and*

a.1.a.2.b.4. 'Enhancement' of the depth accuracy through compensation of all of the following:

a.1.a.2.b.4.a. Motion of the acoustic sensor;

a.1.a.2.b.4.b. In-water propagation from sensor to the seabed and back; *and*

a.1.a.2.b.4.c. Sound speed at the sensor.

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 at the maximum range that it can operate with an 'along track resolution' of less than 15 cm; *and*

a.1.a.3.c. An 'across track resolution' of less than 15 cm;

Technical Notes:

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

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

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

* * * * *

■ 44. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6A002 is amended by:

■ a. Remove the period and add a semi-colon in its place at end of paragraphs a.3.a.2.b, a.3.b.2.b, a.3.g.3 and c.3 in Items paragraph of List of Items Controlled section; and

■ b. Remove ''Signal Processing In The Element (SPRITE);'' and add in its place ''Signal processing in the detector elements;'' in paragraph a.3.d.2.b in the Items paragraph of the List of Items Controlled section.

■ 45. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6A005 is amended by:

■ a. Revising the License Requirements section and paragraph d. of the License Requirements Notes, as set forth below;

■ b. Removing ''520'' and adding in its place ''510'' in paragraphs a.2, a.3, b.2, and b.3 in the Items paragraph of the List of Items Controlled; and

■ c. Revising paragraph a.6 in the Items paragraph of the List of Items Controlled 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).

License Requirements

Reason for Control: NS, NP, AT

Control(s)	*Country Chart*
NS applies to entire entry.	NS Column 2
NP applies to ''lasers'' controlled by 6A005.a.2, a.3, b.2.b, b.3, b.4.b, b.6.b, c.1.b, c.2.b, d.3.c, and d.4.c, as described in the following License Requirements Note..	NP Column 1
AT applies to entire entry.	AT Column 1.

License Requirements Note: *NP controls apply to the following ''lasers'' controlled by 6A005:*

* * * * *

(d) Argon ion ''lasers'' controlled by 6A005.a.2 and 6A005.a.3, having all of the following characteristics:

(1) Operating at wavelengths between 400 and 515 nm; and

(2) An average output power ≥ 50 W;

* * * * *

List of Items Controlled

* * * * *

Items:

* * * * *

a. * * *

a.6. Output wavelength exceeding 975 nm but not exceeding 1,150 nm and any of the following;

a.6.a. Single transverse mode output and output power exceeding 200 W; *or*

a.6.b. Multiple transverse mode output and any of the following:

a.6.b.1. 'Wall-plug efficiency' exceeding 18% and output power exceeding 500 W; or

a.6.b.2. Output power exceeding 2 kW;

Note: *6A005.a.6.b does not control multiple transverse mode, industrial ''lasers'' with output power exceeding 2kW and not exceeding 6 kW with a total mass greater than 1,200 kg. For the purpose of this note, total mass includes all components required to operate the ''laser'', e.g., ''laser'', power supply, heat exchanger, but excludes external optics for beam conditioning and/or delivery.*

* * * * *

■ 46. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6C004 is amended by revising paragraph .b and .c in the Items paragraph of the List of Items Controlled section to read as follows:

6C004 Optical materials as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

* * * * *

Items:

* * * * *

b. Electro-optic materials and non-linear materials, as follows:

b.1. Potassium titanyl arsenate (KTA) (CAS 59400–80–5);

b.2. Silver gallium selenide ($AgGaSe_2$, also known as AGSE) (CAS 12002–67–4);

b.3. Thallium arsenic selenide (Tl_3AsSe_3, also known as TAS) (CAS 16142–89–5);

b.4. Zinc germanium phosphide ($ZnGeP_2$, also known as ZGP, zinc germanium biphosphide or zinc germanium diphosphide); *or*

b.5. Gallium selenide (GaSe) (CAS 12024–11–2);

c. Non-linear optical materials, other than those specified by 6C004.b, having any of the following:

c.1. Having all of the following:

c.1.a. Dynamic (also known as nonstationary) third order nonlinear susceptibility ($\chi^{(3)}$, chi 3) of 10^{-6} m^2/V^2 or more; *and*

c.1.b. Response time of less than 1 ms; *or*

c.2. Second order nonlinear susceptibility ($\chi^{(2)}$, chi 2) of 3.3×10^{-11} m/V or more;

* * * * *

■ 47. Supplement No. 1 to Part 774 (the Commerce Control List), Category 6, ECCN 6C005 is amended by revising the Items paragraph in the List of Items Controlled section to read as follows:

6C005 Synthetic crystalline ''laser'' host material in unfinished form as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

* * * * *

Items:

a. Titanium doped sapphire.

b. [RESERVED]

■ 48. Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7A001 is amended by revising paragraph .a.2 of the Items paragraph in the List of Items Controlled section 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.2.a. A ''bias'' ''repeatability'' of less (better) than 1,250 micro g over a period of one year; *and*

a.2.b. A ''scale factor'' ''repeatability'' of less (better) than 1,250 ppm over a period of one year; *or*

* * * * *

■ 49. Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7D003 is amended by:

■ a. Revising the STA paragraph in the License Exceptions section;

■ b. Revising the Related Controls paragraph of the List of Items Controlled section; and

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

7D003 Other ''software'' as follows (see List of Items Controlled).

* * * * *

License Exceptions

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STA: License Exception STA may not be used to ship or transmit software in 7D003.a, b, or c to any of the eight destinations listed in § 740.20(c)(2) of the EAR.

List of Items Controlled

Unit: * * *

Related Controls: See also 0D521 No. 2 (''source code'' for the ''development'' of fly-by-wire control systems), 0E521 No. 6 (for ''technology'' for the ''development'' of ''software'' controlled by 0D521 No. 2), *7D103* and *7D994*

Related Definitions: * * *

Items:

* * * * *

d. [RESERVED]

N.B. For flight control ''source code,'' see 7D004.

* * * * *

■ 50. Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7D004 is added after 7D003 to read as follows:

7D004 ''Source code'' incorporating ''development'' ''technology'' specified by 7E004.a or 7E004.b, for any of the following: (see List of Items Controlled).

License Requirements

Reason for Control: NS, AT

Control(s)	*Country chart*
NS applies to entire entry.	NS Column 1
AT applies to entire entry.	AT Column 1

License Exceptions

CIV: N/A

TSR: N/A

STA: License Exception STA may not be used to ship or transmit ''software'' in 7D004.a to .d and .g to any of the eight destinations listed in § 740.20(c)(2) of the EAR.

List of Items Controlled

Unit: $ value

Related Controls: See also 0D521 No. 2 (''source code'' for the ''development'' of fly-by-wire control systems), 0E521 No. 6 (for ''technology'' for the ''development'' of ''software'' controlled by 0D521 No. 2), *7D103* and *7D994*

Related Definitions: N/A

Items:

a. Digital flight management systems for ''total control of flight'';

b. Integrated propulsion and flight control systems;

c. Fly-by-wire or fly-by-light control systems;

d. Fault-tolerant or self-reconfiguring ''active flight control systems'';

e. [RESERVED];

f. Air data systems based on surface static data; *or*

g. Three dimensional displays.

Note: *7D004 does not apply to ''source code'' associated with common computer elements and utilities (e.g., input signal acquisition, output signal transmission, computer program and data loading, built-in test, task scheduling mechanisms) not providing a specific flight control system function.*

■ 51. Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7E001 is amended by revising the Heading and the Related Controls paragraph in the List of Items Controlled section, to read as follows:

7E001 ''Technology'' according to the General Technology Note for the ''development'' of equipment or ''software'', controlled by 7A (except 7A994), 7B (except 7B994), 7D001, 7D002, or 7D003.

List of Items Controlled

Unit: * * *

Related Controls: (1.) See also 0D521 No. 2 (''source code'' for the ''development'' of fly-by-wire control systems), 0E521 No. 6 (for ''technology'' for the ''development'' of ''software'' controlled by 0D521 No. 2), 7E101 and 7E994. (2.) The ''technology'' related to 7A003.b, 7A005, 7A103.b, 7A105, 7A106, 7A115, 7A116, 7A117, 7B103, software in 7D101 specified in the Related Controls paragraph of ECCN 7D101, 7D102.a, or 7D103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: * * *

Items: * * *

■ 52. Supplement No. 1 to Part 774 (the Commerce Control List), Category 7, ECCN 7E004 is amended by revising the Related Controls paragraph and paragraph .b of the Items paragraph in the List of Items Controlled section to read as follows:

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

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: See also 0D521 No. 2 (''source code'' for the ''development'' of fly-by-wire control systems), 0E521 No. 6 (for ''technology'' for the ''development'' of ''software'' controlled by 0D521 No. 2), 7E104 and 7E994.

Related Definitions: * * *

Items:

* * * * *

b. ''Development'' ''technology'', as follows, for ''active flight control systems'' (including fly-by-wire or fly-by-light):

b.1. Photonic-based ''technology'' for sensing aircraft or flight control component state, transferring flight control data, or commanding actuator movement, ''required'' for fly-by-light ''active flight control systems'';

b.2. [RESERVED]

b.3. Real-time algorithms to analyze component sensor information to predict and preemptively mitigate impending degradation and failures of components within an ''active flight control system'';

Note: *7E004.b.3 does not include algorithms for purpose of off-line maintenance.*

b.4. Real-time algorithms to identify component failures and reconfigure force and moment controls to mitigate ''active flight control system'' degradations and failures;

Note: *7E004.b.4 does not include algorithms for the elimination of fault effects through comparison of redundant data sources, or off-line pre-planned responses to anticipated failures.*

b.5. Integration of digital flight control, navigation and propulsion control data, into a digital flight management system for ''total control of flight'';

Note: *7E004.b.5 does not apply to:*

1. ''Development'' ''technology'' for integration of digital flight control, navigation and propulsion control data, into a digital flight management system for ''flight path optimization'';

2. ''Development'' ''technology'' for ''aircraft'' flight instrument systems integrated solely for VOR, DME, ILS or MLS navigation or approaches.

b.6. Full authority digital flight control or multisensor mission management systems, employing ''expert systems'';

N.B.: For ''technology'' for ''Full Authority Digital Engine Control Systems'' (''FADEC Systems''), see ECCN 9E003.h.

Note: *7E004.b does not apply to ''technology'' associated with common computer elements and utilities, e.g., input signal acquisition, output signal transmission, computer program and data loading, built-in test, task scheduling mechanisms) not providing a specific flight control system function.*

* * * * *

■ 53. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9, ECCN 9A001 is amended by removing the phrase ''Participating State'' and adding in its place ''Wassenaar Arrangement Participating State'' in the introductory text of paragraph .b in Note 9A001.a of the Items paragraph in the List of Items Controlled section.

■ 54. Supplement No. 1 to Part 774 (the Commerce Control List), Category 9, ECCN 9A018 is amended by revising paragraph .b of the Items paragraph in the List of Items Controlled section, to read as follows:

9A018 Equipment on the Wassenaar Arrangement Munitions List.

* * * * *

List of Items Controlled

* * * * *

Items:

* * * * *

b. Ground vehicles (including trailers) and ''components,'' as follows:

b.1. Ground transport vehicles (including trailers) and ''parts'' and ''components'' therefor designed or modified for non-combat military use;

b.2. Other ground vehicles having all of the following:

b.2.a. Manufactured or fitted with ''materials'' or ''components'' to provide ballistic protection to level III (National Institute of Justice standard 0108.01, September 1985) or better; (See § 770.2(h)—Interpretation 8).

b.2.b. A transmission to provide drive to both front and rear wheels simultaneously, including those vehicles having additional wheels for load bearing purposes whether driven or not;

b.2.c. Gross Vehicle Weight Rating (GVWR) greater than 4,500 kg; *and*

b.2.d. Designed or modified for off-road use;

b.3. ''Components'' having all of the following:

b.3.a. ''Specially designed'' for vehicles specified in 9A018.b.2; *and*

b.3.b. Providing ballistic protection to level III (NIJ 0108.01, September 1985, or comparable national standard) or better.

Note: *9A018 does not apply to civil vehicles designed or modified for transporting money or valuables.*

* * * * *

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

■ a. Revising paragraph a.5 of the Items paragraph in the List of Items Controlled section, as set forth below; and

■ b. Removing the period at the end of paragraph h.3 and adding in its place a semi-colon.

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

* * * * *

List of Items Controlled

* * * * *

Items:

a. * * *

a.5. Cooled turbine blades, vanes or ''tip-shrouds'', other than those described in 9E003.a.1, designed to operate at a 'gas path temperature' of 1,693 K (1,420°C) or more;

Technical Notes:

1. 'Gas path temperature' is the bulk average gas path total (stagnation) temperature at the leading edge plane of the turbine component when the engine is running in a 'steady state mode' of operation at the certificated or specified maximum continuous operating temperature.

2. The term 'steady state mode' defines engine operation conditions, where the engine parameters, such as thrust/power, rpm and others, have no appreciable fluctuations, when the ambient air temperature and pressure at the engine inlet are constant.

* * * * *

■ 56. Supplement No. 1 to Part 774 (the Commerce Control List), Supplement No. 2 ''General Technology and Software Notes'' is amended by revising Note 2 ''General Software Note'' to read as follows:

SUPPLEMENT NO. 2 TO PART 774—GENERAL TECHNOLOGY AND SOFTWARE

Notes

* * * * *

2. *General Software Note.* License Exception TSU (mass market software) (see § 740.13 of the EAR) is available to all destinations, except countries in Country Group E:1 of Supplement No. 1 to part 740 of the EAR, for release of ''software'' which is any of the following:

1. Generally available to the public by being:

a. Sold from stock at retail selling points, without restriction, by means of:

1. Over the counter transactions;

2. Mail order transactions;

3. Electronic transactions; *or*

4. Telephone call transactions; *and*

b. Designed for installation by the user without further substantial support by the supplier.

2. [RESERVED] See § 734.3(b)(3) for ''publicly available technology and software.''

3. The minimum necessary ''object code'' for the installation, operation, maintenance (checking) or repair of those items whose export has been authorized.

Note: *Minimum necessary ''object code'' does not enhance or improve the performance of an item or provide new features or functionality.*

Note: *The General Software Note does not apply to ''software'' controlled by Category 5, part 2 ''Information Security''). For ''software'' controlled by Category 5, part 2, see Supplement No. 1 to part 774, Category 5, part 2, Note 3—Cryptography Note.*

■ 57. Supplement No. 5 to Part 774 is amended by revising 0D521 and 0E521 sections of the table to read as follows:

Supplement No. 5 to Part 774—Items Classified Under ECCNS 0A521, 0B521, 0C521, 0D521 and 0E521

* * * * *

Item descriptor. **Note:** The description must match by model number or a broader descriptor that does not necessarily need to be company specific	Date of initial or subsequent BIS classification. (ID = initial date; SD = subsequent date)	Date when the item will be designated EAR99, unless reclassified in another ECCN or the 0Y521 classification is reissued	Item-specific license exception eligibility
* * * * * * *			
0D521. Software			
* * * * * * *			
No. 2 ..... "Source code" for the "development" of fly-by-wire control systems.	June 20, 2013 (ID)	June 20, 2014	License Exception GOV under § 740.11(b)(2)(ii) only.

Item descriptor. **Note:** The description must match by model number or a broader descriptor that does not necessarily need to be company specific	Date of initial or subsequent BIS classification. (ID = initial date; SD = subsequent date)	Date when the item will be designated EAR99, unless reclassified in another ECCN or the 0Y521 classification is reissued	Item-specific license exception eligibility
0E521. Technology			
* *	* *	*	* *
No. 2 [RESERVED]	[RESERVED]	[RESERVED]	[RESERVED].
No. 3 [RESERVED]	[RESERVED]	[RESERVED]	[RESERVED].
No. 4 [RESERVED]	[RESERVED]	[RESERVED]	[RESERVED].
No. 5 [RESERVED]	[RESERVED]	[RESERVED]	[RESERVED].
No. 6	June 20, 2013 (ID)	June 20, 2014	License Exception GOV under § 740.11(b)(2)(ii) only.
"Technology" for fly-by-wire control systems, as follows:.			
a. "Technology" according to the General Technology Note for the "development" of "software" controlled by 0D521; or			
b. "Development" "technology" for "active flight control systems" for control law compensation for sensor location or dynamic airframe loads, i.e., compensation for sensor vibration environment or for variation of sensor location from the center of gravity.			

Dated: June 12, 2013.

Kevin J. Wolf,

Assistant Secretary of Commerce for Export Administration.

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