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DEPARTMENT OF COMMERCE

Bureau of Industry and Security

15 CFR Part 774

[Docket No. 140131087-4087-01]

RIN 0694 –AG08

Revisions to the Commerce Control List: Imposition of Controls on Integrated Circuits, Helicopter Landing System Radars, Seismic Detection Systems, and Technology for IR Up-Conversion Devices

AGENCY: Bureau of Industry and Security, Commerce.

ACTION: Interim final rule with request for comments.

SUMMARY: In this rule, the Bureau of Industry and Security (BIS) amends the Export Administration Regulations (EAR) to impose foreign policy controls on read-out integrated circuits and related “software” and “technology,” radar for helicopter autonomous landing systems, seismic intrusion detection systems and related “software” and “technology”, and “technology” “required” for the “development” or “production” of specified infrared up-conversion devices. The read-out integrated circuits and related “technology” are controlled under new Export Control Classification Numbers (ECCNs) on the Commerce Control List. An existing ECCN has been amended to control the related “software” for those items. New

paragraphs have been added to certain existing ECCNs to control radar for helicopter autonomous landing systems, seismic intrusion detection systems, and the “technology,” as mentioned, for specified infrared up-conversion devices. Specified existing “software” and “technology” ECCNs have been amended to apply to helicopter autonomous landing systems and seismic intrusion detection systems. The items are controlled for regional stability reasons Column 1 (RS Column 1) and Column 2 (RS Column 2), and antiterrorism reasons Column 1 (AT Column 1). The Departments of Commerce, State and Defense have determined that imposition of these license requirements protects U.S. national security and foreign policy interests. Specifically, those agencies have determined that the items described in this rule have civilian applications but also warrant immediate controls under the EAR because of their potential military applications.

DATES: This rule is effective [INSERT DATE OF PUBLICATION]. Comments must be received by [INSERT DATE 60 DAYS FROM DATE OF PUBLICATION].

ADDRESSES: You may submit comments by any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. The identification number for this rulemaking is BIS–2014–0033.
- By email directly to: publiccomments@bis.doc.gov. Include RIN 0694–AG08 in the subject line.
- By mail or delivery to Regulatory Policy Division, Bureau of Industry and Security, U.S. Department of Commerce, Room 2099B, 14th Street and Pennsylvania Avenue NW, Washington, DC 20230. Refer to RIN 0694–AG08.

FOR FURTHER INFORMATION CONTACT: Chris Costanzo, Senior Engineer, Sensors and Aviation Division, Office of National Security and Technology Transfer Controls by phone at (202) 482-0718 or by email at Christopher.Costanzo@bis.doc.gov

SUPPLEMENTARY INFORMATION:

In this rule, BIS amends the EAR to impose license requirements on read-out integrated circuits, and “technology” “required” for the “development” or “production” of specified infrared up-conversion devices to all destinations, except Canada, as well as radar for helicopter autonomous landing systems and seismic intrusion detection systems to destinations as identified. The Departments of Commerce, State and Defense have determined that imposition of these license requirements protects national security and foreign policy interests of the United States because of the items’ potential military applications, which are described in greater detail below.

The items are controlled under new or amended Export Control Classification Numbers (ECCNs) on the Commerce Control List for RS Column 1, RS Column 2, and AT Column 1 reasons. Destinations to which RS Column 1 or RS Column 2 controls apply are indicated by an “X” in the RS Column 1 or RS Column 2, respectively, for each applicable destination in the Commerce Country Chart, Supplement No. 1 to part 738 of the EAR. An explanation of RS license requirements appears in Section 742.6(a) of the EAR. Exporters also should consult the Commerce Country Chart to determine to which destinations the AT Column 1 license requirement applies.

New License Requirements

New ECCN 6A990 - Read-Out Integrated Circuits

Under this rule, a license is required for the export and reexport of items classified under new ECCN 6A990 for read-out integrated circuits (ROICs) to all destinations, except Canada, for RS Column 1 reasons, and AT Column 1 reasons. The ROICs subject to 6A990 are used only in cameras to provide images for collision avoidance and navigation support for civilian vehicles at distances up to 150 m, and have potential military application because of the infrared detectors, which can be used to enable military personnel to detect images in the dark, enhancing nighttime warfighting capability. Given that potential military application, BIS is implementing a worldwide licensing requirement, except for Canada, and the items will be controlled for RS Column 1 and AT Column 1 reasons with License Exception LVS not available.

The heading of existing ECCN 6D991 is revised to indicate that “software” for ROICs under new 6A990 is covered by 6D991. The previous heading read “6D991 “Software” specially designed for the “development”, “production”, or “use” of equipment controlled by 6A002.a.1.d, 6A991, 6A996, 6A997, or 6A998.” BIS revised the heading to include commodities controlled by ECCN 6A990. ECCN 6D991, “software” for commodities controlled by ECCN 6A990, is controlled for RS Column 1 reasons.

Also, “technology” for ROICs is controlled under new ECCN 6E990 - “Technology” “required” for the “development” or “production” of commodities controlled by ECCN 6A990. ECCN 6E990 “Technology” for ROICs is controlled for RS Column 1 and AT Column 1 reasons.

New paragraph in ECCN 6A998 – Radar for Helicopter Autonomous Landing Systems

In this rule, BIS also adds paragraph .c to ECCN 6A998. ECCN 6A998, which controls radar systems, equipment and “major components,” and “specially designed” “components,” is

expanded through new paragraph .c to impose a license requirement for export and reexport of millimeter wave enhanced vision radar imaging systems “specially designed” for rotary wing aircraft and having all of the characteristics identified in subparagraphs .c.1, .c.2, .c.3, and .c.4. Radar for helicopter autonomous landing systems provides visual awareness and obstacle avoidance in degraded visual conditions. While important in its civilian applications, this radar poses concern with regard to its potential military applications by adversaries of the United States and its allies, and BIS is implementing licensing requirements through this new RS Column 2 control on ECCN 6A998 and an AT Column 1 control.

A license is required for items classified in paragraph .c of ECCN 6A998 for RS Column 2 reasons when going to any destination, except Australia, Japan, New Zealand, and countries in the North Atlantic Treaty Organization, as indicated in the Commerce Country Chart in Supplement No. 1 to part 738 of the EAR and in Section 742.6(a)(4) of the EAR. The existing AT Column 1 reason for control for ECCN 6A998 continues to apply to the entire entry, including new paragraph .c items.

The existing related “software” and “technology” for ECCN 6A998 - controlled under ECCNs 6D991 and 6E991, respectively - also are related to items in subparagraphs .c.1 through .c.4, as specified in the respective entries.

New paragraph in ECCN 6A999 – Seismic Intrusion Detection Systems

By adding paragraph .c to ECCN 6A999, which controls specific processing equipment, BIS expands that ECCN by imposing a license requirement for export and reexport of seismic intrusion detection systems, which detect, classify and determine the bearing on the source of a detected signal. While the systems can be used for monitoring earthquakes, they also have the

capability for military use in detecting the movement or motion of people, vehicles, and equipment. Given the potential military uses, BIS is imposing a license requirement to all destinations but close military allies through the RS Column 2 controls.

In addition, AT continues to apply to all items in the entry, including those items in new paragraph .c, to North Korea. In addition, BIS revises existing paragraph .a of ECCN 6A999 to distinguish the items controlled by paragraph .a from those controlled by new paragraph .c.

Further, to ensure appropriate controls for operation “software” for seismic intrusion detection devices controlled under ECCN 6A999.c, BIS revises ECCN 6D993 to add two new paragraphs. New paragraph .b controls “software” “specially designed” for seismic intrusion detection systems in 6A999.c, and new paragraph .c controls “source code” for seismic intrusion detection systems in 6A999.c. “Software” under new paragraph .b is controlled for RS Column 2 reasons and “source code” under new paragraph .c. is controlled for RS Column 1 reasons. Both paragraphs, like all of ECCN 6D993, are also controlled for AT Column 1 reasons.

Lastly, BIS revises ECCN 6E991, “technology” for the “development,” “production” or “use” of equipment controlled by 6A991, 6A996, 6A997 or 6A998,” by adding new paragraph .c to include equipment controlled by ECCN 6A999.c.

Revision of scope of ECCN 6E001 – “Technology” according to the General Technology Note for the “development” of equipment, materials or “software” controlled by certain Category 6 ECCNs

BIS revised the heading of ECCN 6E001 to indicate that “development” “technology” for new ECCN 6A990 (read-out integrated circuits) and “development” “technology” for new paragraph .c. (seismic intrusion detection systems) of ECCN 6A999 are not controlled by ECCN

6E001. ECCN 6A990 “technology” (for “development” or “production”) and ECCN 6A999.c “technology” (for “development,” “production” or “use”) are controlled under ECCN 6E990 and ECCN 6E991, respectively.

Revision of scope of ECCN 6E002 - “Technology” according to the General Technology Note for the “production” of equipment or materials controlled by certain Category 6 ECCNs

As with the heading of ECCN 6E001, BIS also revises the heading of ECCN 6E002 to indicate that “production” “technology” for new ECCN 6A990 (read-out integrated circuits) and “production” “technology” for new paragraph .c. (seismic intrusion detection systems) of ECCN 6A999 are not controlled by ECCN 6E002. As previously described for ECCN 6E001, ECCN 6A990 “technology” (for “development” or “production”) and ECCN 6A999.c “technology” (for “development,” “production” or “use”) are controlled under ECCN 6E990 and ECCN 6E991, respectively.

New paragraph in ECCN 6E993 - “Technology” for Specified Infrared Up-Conversion Devices

This rule adds paragraph .e in ECCN 6E993 to control “technology” “required” for the “development” or “production” of infrared up-conversion devices used to convert near-infrared light into visible light using an organic light emitting diode, which can be used in conventional night vision devices used for home energy inspection or night photography. The item also has important military and law enforcement applications, which is why BIS is imposing a worldwide licensing requirement, except for Canada. New ECCN 6E993.e requires a license to all destinations, except Canada, for RS Column 1 reasons. The existing AT Column 1 reason for control that applies to paragraphs .a through .d also applies to new paragraph .e and to its subparagraphs .e.1 and .e.2.

License Exceptions

License exceptions are described in Part 740 of the EAR. License exceptions may be available for these items if there are no applicable restrictions in section 740.2(a) and all conditions of the respective license exceptions are met for the particular proposed transaction.

Foreign Policy Report

The application of regional stability controls to the items covered by this rule imposes a foreign policy control. Section 6(f) of the Export Administration Act requires that a report be delivered to Congress before imposing such controls. The report was delivered to Congress on September 24, 2014.

Export Administration Act

Since August 21, 2001, the Export Administration Act has been in lapse and the President, through Executive Order 13222 of August 17, 2001 (3 CFR, 2001 Comp., 783 (2002)), as amended by Executive Order 13637 of March 8, 2013, 78 FR 16129 (March 13, 2013), and extended most recently by the Notice of August 7, 2014, 79 FR 46959 (August 11, 2014), has continued the EAR in effect under the International Emergency Economic Powers Act. 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 eligibility for export or reexport under a license exception or without a license (i.e., under the designator “NLR”) 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 [INSERT DATE 30 DAYS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER], pursuant to actual orders for export or reexport to a foreign destination, may proceed to that destination under the previously applicable license exception or without a license (NLR) so long as they are exported or reexported before [INSERT DATE 45 DAYS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Any such items not actually exported or reexported before midnight, on [INSERT DATE 45 DAYS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER], require a license in accordance with this regulation.

“Deemed” exports of “technology” and “source code” removed from eligibility for export under a license exception or without a license (under the designator “NLR”) as a result of this regulatory action may continue to be made under the previously available license exception or without a license (NLR) before [INSERT 90 DAYS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Beginning at midnight on [INSERT 90 DAYS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER], such “technology” and “source code” may no longer be released, without a license, to a foreign national subject to the “deemed” export controls in the EAR when a license would be required to the home country of the foreign national 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, reducing costs, harmonizing rules, and promoting flexibility. This rule has been determined to be a significant regulatory action, although not economically significant, under section 3(f) of Executive Order 12866. Accordingly, the rule has been reviewed by the Office of Management and Budget (OMB).
2. This rule involves collections previously approved by the Office of Management and Budget (OMB) under Control Number 0694-0088, “Multi-Purpose Application,” which carries a burden hour estimate of 43.8 minutes to prepare and submit form BIS-748. Total burden hours associated with the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) (PRA) and OMB Control Number 0694-0088 are not expected to increase significantly as a result of this rule. Notwithstanding any other provisions of law, no person is required to respond to, nor be subject to a penalty for failure to comply with a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.
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 comment and a delay in effective date are inapplicable because this regulation involves a military or foreign affairs function of the United States (*See* 5 U.S.C. 553(a)(1)). BIS is implementing this rule to protect U.S. national security and foreign policy interests by imposing an export and reexport license requirement on Read-Out Integrated Circuits, Radar for Helicopter Landing Systems, Seismic Intrusion Detection Systems, and Technology for Specified Infrared Up-Conversion Devices that are used in important sensor applications. The Departments of Commerce, State and Defense determined that immediate imposition of license requirements for these items is warranted to protect U.S. national security and foreign policy interests. Specifically, those agencies have determined that the items described in this rule warrant controls because of their potential military applications, which are noted above.

Further, BIS finds good cause to waive the 30-day delay in effectiveness under 5 USC 553(d)(3). Immediate implementation will allow BIS to prevent exports of these items to users and for uses that pose a national security threat to the United States or its allies. If BIS delayed this rule to allow for a 30-day delay in effectiveness, the resulting delay in implementation would afford an opportunity for the export of these items to users and uses that pose such a national security threat, thereby undermining the purpose of the rule.

Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule by 5 U.S.C. 553, or by any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, are not applicable. Although notice and opportunity for comment are not required, BIS is issuing this rule as an interim final rule with a request for comments. All comments must be in writing and submitted via one or more of the methods listed under the ADDRESSES caption to this notice. All comments (including any personal identifiable information) will be available for public inspection and copying. Those wishing to comment anonymously may do so by submitting their comment via regulations.gov and leaving the fields for identifying information blank.

List of Subjects in 15 CFR Part 774

Exports, Reporting and Recordkeeping requirements.

Accordingly, part 774 of the Export Administration Regulations (15 CFR parts 730-774) is amended as follows:

PART 774 – [AMENDED]

1. 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 7, 2014, 79 FR 46959 (August 11, 2014).

2. Supplement No. 1 to Part 774 – The Commerce Control List, Category 6, is amended by adding a new ECCN 6A990 entry, immediately following the entry for Export Control Classification Number (ECCN) 6A226 and immediately preceding the entry for ECCN 6A991, to read as follows:

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

* * * * *

6A990 Read-out integrated circuits (ROICs) that enable 3D automotive imaging and ranging in the wavelength range exceeding 1,200 nm, but not exceeding 3,000 nm, at distances up to 150 m.

License Requirements

Reason for Control: RS, AT

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

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

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Related Controls: N/A

Related Definitions: N/A

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

- Supplement No. 1 to Part 774 – The Commerce Control List, Category 6, ECCN 6A998 is amended by revising the “License Requirements” section and adding paragraph c. to the “Items” paragraph of the “List of Items Controlled” section to read as follows:

6A998 Radar systems, equipment and “major components,” n.e.s., and “specially designed” “components” therefor, as follows (see List of Items Controlled).

License Requirements

Reason for Control: RS, AT

Control(s)	Country Chart (See Supp. No. 1 to part 738)
RS applies to 6A998.b	RS Column 1
RS applies to 6A998.c	RS Column 2
AT applies to entire entry	AT Column 1

* * * * *

List of Items Controlled

*Related Controls: * * **

*Related Definitions: * * **

*Items: * * **

c. Millimeter wave enhanced vision radar imaging systems “specially designed” for rotary wing aircraft and having all of the following:

- c.1. Operates at a frequency of 94 GHz;
- c.2. An average output power of less than 20 mW;
- c.3. Radar beam width of 1 degree; and
- c.4. Operating range equal to or greater than 1500 m.

4. Supplement No. 1 to Part 774 – The Commerce Control List, Category 6, ECCN 6A999 is amended by:

- a. Revising the “License Requirements” section;
- b. Revising paragraph a. to the “Items” paragraph of the “List of Items Controlled” section; and
- c. Adding paragraph c. to the “Items” paragraph of the “List of Items Controlled” section to read as follows:

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

License Requirements

Reason for Control: RS, AT

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

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

* * * * *

List of Items Controlled

Related Controls: * * *

Related Definitions: * * *

Items:

- a. Seismic detection equipment not controlled in paragraph c.
- b. * * *
- c. Seismic intrusion detection systems that detect, classify and determine the bearing on the source of a detected signal.

5. Supplement No. 1 to Part 774 – The Commerce Control List, Category 6, ECCN 6D991 is amended by revising the heading and “License Requirements” section to read as follows:

6D991 “Software,” n.e.s., “specially designed” for the “development”, “production”, or “use” of commodities controlled by 6A002.a.1.d, 6A990, 6A991, 6A996, 6A997, or 6A998.

License Requirements

Reason for Control: RS, AT

Control(s)	Country Chart (See Supp. No. 1 to part 738)
RS applies to “software” for commodities controlled by 6A002.a.1.d, 6A990, or 6A998.b	RS Column 1
RS applies to “software” for 6A998.c	RS Column 2
AT applies to entire entry, except “software” for commodities controlled by 6A991	AT Column 1
AT applies to “software” for commodities controlled by 6A991	AT Column 2

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6. Supplement No. 1 to Part 744 – The Commerce Control List, Category 6, ECCN 6D993 is amended by:

- a. Revising the “License Requirements” section; and
- b. adding paragraphs b. and c. to the “Items” paragraph of the “List of Items Controlled” section to read as follows:

6D993 Other “software,” not controlled by 6D003, as follows (see List of Items Controlled).

License Requirements

Reason for Control: RS, AT

Control(s)	Country Chart (See Supp. No. 1 to part 738)
RS applies to 6D993.c	RS Column 1
RS applies to 6D993.b	RS Column 2
AT applies to entire entry	AT Column 1

* * * * *

List of Items Controlled

Related Controls: * * *

Related Definitions: * * *

Items: * * *

- b. “Software” “specially designed” for seismic intrusion detection systems in 6A999.c.
- c. “Source Code” “specially designed” for seismic intrusion detection systems in 6A999.c.

7. Supplement No. 1 to Part 774 - The Commerce Control List, Category 6 ECCN 6E001 is amended by revising the heading to read as follows:

6E001 “Technology” according to the General Technology Note for the “development” of equipment, materials or “software” controlled by 6A (except 6A990, 6A991, 6A992, 6A994, 6A995, 6A996, 6A997 6A998, or 6A999.c), 6B (except 6B995), 6C (except 6C992 or 6C994), or 6D (except 6D991, 6D992, or 6D993).

* * * * *

8. Supplement No. 1 to Part 774 – The Commerce Control List, Category 6, ECCN 6E002 is amended by revising the heading to read as follows:

6E002 “Technology” according to the General Technology Note for the “production” of equipment or materials controlled by 6A (except 6A990, 6A991, 6A992, 6A994, 6A995, 6A996, 6A997, 6A998 or 6A999.c), 6B (except 6B995) or 6C (except 6C992 or 6C994).

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9. Supplement No. 1 to Part 774 – The Commerce Control List, Category 6 is amended by adding ECCN 6E990 immediately following the entry for ECCN 6E202 and immediately preceding the entry for ECCN 6E991, to read as follows:

6E990 Technology “required” for the “development” or “production” of commodities controlled by ECCN 6A990.

License Requirements

Reason for Control: RS, AT

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

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

CIV: N/A

TSR: N/A

List of Items Controlled

Related Controls: N/A

Related Definitions: N/A

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

10. In Supplement No. 1 to Part 774 – The Commerce Control List, Category 6, ECCN

6E991 is revised to read as follows:

6E991 “Technology” for the “development”, “production” or “use” of equipment controlled by 6A991, 6A996, 6A997, 6A998 or 6A999.c.

License Requirements

Reason for Control: RS, AT

Control(s)	Country Chart (See Supp. No. 1 to part 738)
RS applies to “technology” for equipment controlled by 6A998.b, 6A998.c and 6A999.c	RS Column 1
AT applies to entire entry, except “technology” for equipment controlled by 6A991	AT Column 1
AT applies to “technology” for equipment controlled by 6A991	AT Column 2

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

CIV: N/A

TSR: N/A

List of Items Controlled

Related Controls: N/A

Related Definitions: N/A

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

11. Supplement No. 1 to Part 774 – The Commerce Control List, Category 6, ECCN 6E993

is amended by:

a. Revising the “License Requirements” section; and

b. Adding paragraph e. to the “Items” paragraph of the “List of Items Controlled” section to read as follows:

6E993 Other “technology,” not controlled by 6E003, as follows (see List of Items Controlled).

License Requirements

Reason for Control: RS, AT

Control(s)	Country Chart (See Supp. No. 1 to part 738)
RS applies to 6E993.e	RS Column 1
AT applies to entire entry	AT Column 1

* * * * *

List of Items Controlled

Related Controls: * * *

Related Definition: * * *

Items: * * *

e. “Technology” “required” for the “development” or “production” of infrared up-conversion devices having all of the following:

e.1. A response in the wavelength range exceeding 700 nm but not exceeding 1500 nm;

and

e.2. A combination of an infrared photodetector, light emitting diode (OLED), and nanocrystal to convert infrared light into visible light.

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DATED: October 7, 2014

Kevin J. Wolf

Assistant Secretary

for Export Administration

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