DEPARTMENT OF COMMERCE

Bureau of Industry and Security

15 CFR Part 774

[Docket No. 140611493–4493–01]

Civil Uses of Certain Microwave Monolithic Integrated Circuit (MMIC) Power Amplifiers, Discrete Microwave Transistors and Bi-Static and Multi-Static Radar

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

ACTION: Notice of inquiry with request for comments.

SUMMARY: This notice of inquiry requests comments that cite specific examples of civil uses of certain MMIC power amplifiers and discrete microwave transistors, both of which operate at frequencies exceeding 2.7 GHz, and (3) bi-static/multi-static radar that exploits greater than 125 kHz bandwidth and is lower than 2 GHz center frequency to passively detect or track using radio frequency (RF) transmissions (*e.g.,* commercial radio or television stations). The Bureau of Industry and Security (BIS) is requesting this information because several comments on rules recently published by the Departments of State and Commerce made claims that civil applications for these types of commodities exist or soon will be developed. However, the commenters did not provide specific examples of such applications. BIS is seeking specific examples to assess whether it should propose to the Departments of State and Defense further amendments to the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations (EAR) as part of the Administration's Export Control Reform Initiative.

DATES: Comments should be received no later than September 2, 2014.

ADDRESSES: Comments may be submitted:

- Via the Federal eRulemaking Portal: *http://www.regulations.gov.* The identification number for this rulemaking is BIS–2012–0045.
- By email directly to *publiccomments@bis.doc.gov*. Include ''Military Electronics Notice of Inquiry'' 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 ''Military Electronics Notice of Inquiry.''

FOR FURTHER INFORMATION CONTACT: Brian Baker, Director, Electronics and Materials Division, Office of National Security and Technology Transfer Controls, (202) 482–5534, *brian.baker@bis.doc.gov.*

SUPPLEMENTARY INFORMATION:

Background

The Bureau of Industry and Security (BIS) publishes this notice of inquiry to request comments from the public on examples of civil uses of certain (1) MMIC power amplifiers and (2) discrete power transistors, both of which operate at frequencies exceeding 2.7 GHz, and (3) bi-static/multi-static radar that exploits greater than 125 kHz bandwidth and is lower than 2 GHz center frequency to passively detect or track using radio frequency (RF) transmissions (e.g., commercial radio or television stations). Simultaneously with the publication of this notice, the Department of State is publishing a final rule expressing Category XI of the United States Munition List (USML) in positive terms and removing from that category items the President determined no longer warrant control on the USML (herein the State final military electronics rule), and BIS is publishing a final rule adding those items to the Commerce Control List (herein the BIS final military electronics rule). Both rules are being published after review by the Departments of State, Defense and Commerce of public comments on the proposed rules. Some comments received in response to those rules suggested that certain commodities that were retained on the USML and other commodities that were added to a ''600 series'' Export Control Classification Number (ECCN) may have or soon will have substantial civil end uses. BIS is now seeking specific information about the uses of certain MMIC power amplifiers and discrete microwave transistors that would assist it in determining whether those devices would be appropriately controlled under a ''600 series'' or under a non-''600 series'' ECCN. The ''600 series'' ECCNs typically control items of a military nature whereas non-''600 series'' ECCNs typically control items that, although they often have military applications, also have substantial civil applications. BIS is also seeking specific information that would assist in determining whether control of certain bi-static and multi-static radar that passively detects or tracks objects using radio frequency (RF) transmissions (*e.g.,* commercial radio or television stations) would be appropriately controlled under the ITAR or under the EAR.

MMIC Amplifiers and Discrete Microwave Transistors

There are three rules, currently published or in development, that impact MMIC amplifiers and discrete microwave transistors: The rule implementing the decisions of the 2013 plenary meeting of the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (herein the Wassenaar 2013 rule), the BIS final military electronics rule, and the State final military electronics rule. The Wassenaar 2013 rule, which is currently under development, is expected to publish and go into effect before the BIS final military electronics rule and the State final military electronics rule become effective. When both the Wassenaar 2013 rule and the BIS final military electronics rule are effective, BIS expects that no unclassified MMIC power amplifiers or discrete microwave transistors will be controlled under the USML. When all three rules are effective, BIS expects that all unclassified MMIC power amplifiers will be controlled under ECCN 3A611.c or ECCN 3A001.b.2 or will be designated EAR99. Discrete microwave transistors will be controlled under ECCN 3A611.d, 3A001.b.3, 3A001.h or EAR99.

Commenters on the proposed rule that led to the BIS military electronics final rule stated use of these amplifiers and transistors enable the production of devices with more power, greater efficiency and fewer parts, goals that are common to civil and military electronic device design. The commenters mentioned several actual or potential civil uses for the MMIC power amplifiers and discrete microwave transistors proposed for control in ECCN 3A611.c and .d. Those uses included: Wi Fi, Wi Max, point-to-point radios for cellular backhaul, commercial Ka-band used in commercial satellite-based wireless internet ground stations, V-Band radios used in small commercial cellular networks, and civil air traffic control systems. However, the commenters did not provide specific examples of such uses. Therefore, the final rule made only four very limited changes to proposed 3A611.c and .d as a result of the review of the public comments. Those changes were increases to the power added efficiency threshold for MMIC power amplifiers and discrete microwave transistors in the frequency ranges from greater than 2.7 GHz up to and including 2.9 GHz and greater than 2.9 GHz up to and including 3.2 GHz.

BIS is seeking information that would help answer whether any of the MMIC power amplifiers that will be controlled under ECCN 3A611.c and .d upon the effective date of the BIS final military electronics rule actually have sufficient civil applications that would justify controlling them under ECCN 3A001.b.2 and .b.3, as those paragraphs are expected to be revised by the Wassenaar 2013 rule, respectively. Specific information that identifies actual uses of the MMIC power amplifiers and discrete microwave transistors that were included in ECCN 3A611 in the BIS final military electronics rule is needed. To the extent feasible, the information should identify product names, models, quantity, and total value of the MMIC power amplifiers and discrete microwave transistors used in those products.

MMIC Power Amplifiers

When the Wassenaar 2013 rule and the BIS final military electronics rule are effective, BIS expects that the Commerce Control List (CCL) will control MMIC power amplifiers as described below.

ECCNs 3A001.b.2 and 3A611.c will each control MMICs that operate at frequencies exceeding 2.7 GHz.

ECCN 3A001.b.2 will control MMIC power amplifiers that operate in 12 frequency ranges. It applies the additional parameter of peak saturated power output and, in 10 of the operating frequency ranges, fractional bandwidth to identify the MMIC power amplifiers that it controls.

ECCN 3A611.c will distinguish the MMIC power amplifiers that it will control from those in the same operating frequency range that ECCN 3A001.b.2 will control by specifying a higher fractional bandwidth value, or a higher peak saturated power output value or both, or by specifying the same fractional bandwidth and peak saturated power output values but also specifying a specified power added efficiency value.

MMIC 3A001.b.2 and 3A611.c Comparison Table

The following table lists the control parameters for ECCNs 3A001.b.2 and 3A611.c. Note that the parameters for 3A001.b.2 are the parameters adopted by Wassenaar Arrangement 2013 plenary meeting for Dual-Use Category 3.A.1.b.2 (that is expected to be implemented in the forthcoming Wassenaar 2013 rule) and the parameters for 3A611.c are those set forth in the BIS final military electronics rule. The first column lists the operating frequency ranges. The second column lists the additional control parameters in each frequency range that will be listed in 3A001.b.2. The third column lists the additional control parameters in each frequency range that will be listed in 3A611.c. Within the third column, the parameters that will cause a MMIC power amplifier to be controlled under ECCN 3A611.c rather than 3A001.b.2 are in *italics*.

If a MMIC power amplifier operates at frequencies in more than one operating frequency range, the range with the lowest peak saturated power output applies.

A MMIC power amplifier is controlled under the applicable ECCN if it meets or exceeds the additional parameters anywhere within the specified operating frequency range. It need not meet those parameters throughout the entire operating frequency range.

Because of the EAR's CCL Order of Review (Supplement No. 4 to Part 774), a MMIC power amplifier that meets the additional parameters of both 3A611.c and 3A001.b.2 will be controlled by 3A611.c.

In the ''additional parameters'' columns, ''FB'' means ''fractional bandwidth;'' ''PSPO'' means ''peak saturated power output;'' and ''PAE'' means ''power added efficiency.''

Operating frequency range	3A001.b.2 Additional parameters (from forthcoming Wassenaar Arrangement 2013 rule)	3A611.c Additional Parameters (from BIS final military electronics rule)
>2.7 GHz & ≤2.9 GHz	FB >15% & PSPO >75W (48.75dBm).	FB >15% & PSPO >75W (48.75dBm) *& PAE ≥55% or FB >60% & PSPO >150W (51.8dBm).*
>2.9 GHz & ≤3.2 GHz	FB >15% & PSPO >55W (47.4dBm).	FB >15% & PSPO >55W (47.4dBm) *& PAE ≥55% or FB >55% & PSPO >110W (50.4dBm).*
>3.2 GHz & ≤3.7 GHz	FB >15% & PSPO >40W (46dBm)	FB >15% & PSPO >40W (46dBm) *& PAE ≥45% or FB >50% & PSPO >80W (49dBm).*
>3.7 GHz & ≤6.8 GHz	FB >15% & PSPO >20W (43dBm)	FB >15% & PSPO >20W (43dBm) *& PAE ≥40% or FB >45% & PSPO >40W (46dBm).*
>6.8 GHz & ≤8.5 GHz	FB >10% & PSPO >10W (40dBm)	FB >10% & PSPO >10W (40.0dBm) *& PAE ≥40% or FB >40% PSPO >20W (43dBm).*
>8.5 GHz & ≤16 GHz	FB >10% & PSPO >5W (37dBm)	FB >10% & PSPO >5W (37dBm) *& PAE ≥35% or FB >40% & PSPO >10W (40dBm).*
>16 GHz & ≤31.8 GHz	FB >10% & PSPO >3W (34.77dBm).	FB >10% & PSPO >3W (34.77dBm) *& PAE ≥20%.*
>31.8 GHz & ≤37 GHz	PSPO >0.1 nW (−70 dBm)	PSPO *>2W (33dBm*).
>37 GHz & ≤43.5 GHz	FB >10% & PSPO >1W (30 dBm)	FB >10% & PSPO >1W (30dBm) *& PAE ≥15%.*
>43.5 GHz & ≤75 GHz	FB >10% & PSPO >31.62 mW (15 dBm).	FB >10% & PSPO >31.62 mW (15dBm) *& PAE ≥10%.*
>75 GHz & ≤90 GHz	FB >5% & PSPO >10mW (10 dBm).	FB >5% & PSPO >10mW (10dBm) *& PAE ≥10%.*
>90 GHz	PSPO >0.1nW (−70 dBm)	If operating frequency range is >90 GHz & ≤110 GHz. *PSPO >1.0mW (0dBm).* If operating frequency range is >110 GHz. *PSPO >100 nW (−40dBm).*

Discrete Microwave Transistors

When the Wassenaar 2103 rule and the BIS final military electronics rules are effective, BIS expects that the CCL will control discrete microwave transistors as described below.

ECCN 3A001.b.3 will divide the discrete microwave transistors into 11 operating frequency ranges and will use the additional control parameter of peak saturated power output to identify the discrete microwave transistors that it controls.

ECCN 3A611.d will distinguish the discrete microwave transistors that it controls from those in the same frequency range that are controlled by

ECCN 3A001.b.3 by specifying a higher value for peak saturated power output, or by specifying a value for power added efficiency or both.

Discrete Microwave Transistor ECCN 3A001.b.3 and 3A611.d Comparison Table

The following table lists the control parameters for ECCNs 3A001.b.3 and 3A611.d. Note that the parameters for 3A001.b.3 are the parameters adopted by the Wassenaar Arrangement 2013 plenary meeting for Dual-Use Category 3.A.1.b.3 (that will be implemented in the forthcoming Wassenaar 2103 rule) and the parameters for 3A611.d are those set forth in the BIS final military electronics rule. The first column lists the operating frequency ranges. The second column lists the additional control parameters in each frequency range listed in 3A001.b.3. The third column lists the additional control parameters in each frequency range listed in 3A611.d. Within the third column, the parameters that cause a discrete microwave transistor to be controlled under ECCN 3A611.d rather than 3A001.b.3 are in *italics.*

If a discrete microwave transistor operates at frequencies in more than one operating frequency range, the range with the lowest peak saturated power output applies. A discrete microwave transistor is controlled under the applicable ECCN if it meets or exceeds the additional parameters anywhere within the specified operating frequency range. It need not meet those parameters throughout the entire operating frequency range.

Because of the EAR's CCL Order of Review (Supplement No. 4 to Part 774), a discrete microwave transistor that meets the additional parameters of both 3A611.d and 3A001.b.3 is controlled by 3A611.d.

In the ''additional parameters'' columns, ''FB'' means ''fractional bandwidth;'' ''PSPO'' means ''peak saturated power output;'' and ''PAE'' means ''power added efficiency.''

Operating frequency range	3A001.b.3 Additional parameters (from forthcoming Wassenaar Arrangement 2013 rule)	3A611.d Additional parameters (from BIS final military electronics rule)
>2.7 GHz & ≤2.9 GHz	PSPO >400W (56dBm)	PSPO >400W (56dBm) *& PAE ≥60%.*
>2.9 GHz & ≤3.2 GHz	PSPO >205W (53.12 dBm)	PSPO >205W (53.12dBm) *& PAE ≥60%.*
>3.2 GHz & ≤3.7 GHz	PSPO >115W (50.61dBm)	PSPO >115W (50.61dBm) *& PAE ≥45%.*
>3.7 GHz & ≤6.8 GHz	PSPO >60W (47.78dBm)	PSPO >60W (47.78dBm) *& PAE ≥45%.*
>6.8 GHz & ≤8.5 GHz	PSPO >50W (47dBm)	PSPO >50W (47dBm) *& PAE ≥50%.*
>8.5 GHz & ≤12 GHz	PSPO >15W (41.76dBm)	*PSPO >20W (43dBm) & PAE ≥35%.*
>12 GHz & ≤16 GHz	PSPO >40W (46dBm)	PSPO >40W(46dBm) *& PAE ≥35%.*
>16 GHz & ≤31.8 GHz	PSPO >7W (38.45dBm)	*PSPO >20W (43dBm) & PAE ≥30%.*
>31.8 GHz & ≤37 GHz	PSPO >0.5W (27dBm)	*PSPO >2W (33dBm).*
>37 GHz & ≤43.5 GHz	PSPO >1W (30dBm).	PSPO >1W (30dBm) & *PAE ≥20%.*
>43.5 GHz	PSPO >0.1nW (−70dBm).	If operating frequency range is >43.5 GHz & ≤75 GHz *PSPO >0.5W (27 dBm) & PAE ≥15%* If operating frequency range is >75 GHz *PSPO >0.1W (20dBm).*

Bi-Static and Multi-Static Radar

When the rule becomes effective, the State final military electronics rule will control in USML Category XI(a)(3)(xxvii) bi-static and multi-static radar that exploits greater than 125 kHz bandwidth and is lower than 2 GHz center frequency to passively detect or track using radio frequency (RF) transmissions (*e.g.,* commercial radio or television stations). Commenters on the proposed rule leading to the State final military electronics rule expressed concern over this text, asserting that bi-static radar that would meet this control parameter is currently being developed as part of an initiative to develop capabilities to improve flight safety in the vicinity of UAV operations and airports not controlled by traditional air traffic management. The comments asserted that bi-static radar will be used as an airborne collision avoidance system for civil UAVs and for possible application to general aviation aircraft. The comments also asserted that essentially the same system as those proposed to be controlled by paragraph Category XI(a)(3)(xxvii) can be installed at ground based locations to provide air traffic information regarding aircraft not equipped with transponders to aircraft operating around uncontrolled airports. However, the commenters did not provide specific examples of such uses.

BIS would like to verify whether the bi-static/multi-static radar described above is in fact in use in civil air traffic control, collision avoidance or weather radar in sufficient quantities to justify moving such radar to the CCL. Specific information that identifies actual uses of the bi-static/multi-static radar enumerated in USML Category XI(a)(3)(xxvii) is needed. To the extent feasible, the information should identify product names, models, quantity and value of the bi-static and multi-static radar used in those products.

Request for comments

BIS is seeking specific examples of actual civil use of the MMIC power amplifiers, discrete microwave transistors, and bi-static or multi-static radar as described above. As stated under the **DATES** caption to this notice, comments should be received no later than September 2, 2014.

Dated: June 19, 2014.

Kevin J. Wolf,

Assistant Secretary for Export Administration.

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