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RIN: 0694-AF87

Regulatory Policy Division
Bureau of Industry and Security
Room 2099B
U.S. Department of Commerce
14th St. and Pennsylvania Ave., NW
Washington, D.C. 20230

Re: Comments of KEMET Electronics Corporation on BIS Proposed Rule on Spacecraft Systems RIN 0694-AF87

Dear Sir/Madam:

On behalf of KEMET Electronics Corporation ("KEMET"), we submit these comments on the Bureau of Industry and Security ("BIS") proposed revisions to the Export Administration Regulations ("EAR") with respect to spacecraft systems. [1]

KEMET generally supports the Proposed Rule. As drafted, however, the new definition of "Space Qualified" would classify an item under the new 9X515 series, and subject it to national controls *solely* because of "testing." This represents a major change in how BIS and the State Department Directorate of Defense Trade Controls ("DDTC") have viewed the role of testing in classifying items. Further, the criteria "*qualified through successful testing, for operation at altitudes greater than 100 km above the surface of the earth*" creates enormous uncertainty, as it is unclear when and whether a particular set of tests is intended to meet the above criteria.

As drafted, the proposed rules may have the unintended consequence of sweeping into the new 9X515 series, and subjecting to national security controls, basic building block electrical

[1] Bureau of Industry & Security, "*Export Administration Regulations (EAR): Control of Spacecraft Systems and Related Items the President Determines No Longer Warrant Control under the United States Munitions List (USML)*," 78 Fed Reg. 31431 (May 24, 2013) ("Proposed Rule").

components sold as catalog/commercial off-the-shelf ("COTS") items currently classified as EAR99. KEMET believes it is not the intent of the Proposed Rule to impose higher controls on EAR99 items. KEMET herein provides a background on these issues raised by the Proposed Rule, and proposes several alternatives to address these concerns.

A. BACKGROUND ON PRODUCTION AND TESTING OF BASIC BUILDING BLOCK ELECTRICAL COMPONENTS

KEMET, headquartered in Simpsonville, South Carolina, is one of the world's largest producers of capacitors, with origins dating back to 1919. KEMET sells over 30 billion capacitors each year.

Basic Building Block Electrical Components. Capacitors are basic building block components used in virtually all electrical and electronic applications. For example, there are typically two hundred capacitors in a modern cell phone, six hundred capacitors in a modern laptop computer, and tens of thousands in a modern commercial aircraft. Capacitors, resistors, inductors, and thermistors used in modern electronics are single function passive electrical components. Capacitors are single function in that they only serve to store and release electrical energy at a single value, and are distinguishable from integrated circuits (microcircuits) that contain a number of active and passive elements and perform multiple functions.

Performance Controls. The vast majority of basic building block electrical components are classifiable as EAR99 based on performance. For example, with the exception of certain specialized high voltage capacitors controlled under ECCN 3A001.e.2 and ECCN 3A999.c, and certain discharge capacitors controlled under ECCN 3A201.a., capacitors are not currently subject to performance based controls under the Commerce Control List ("CCL").

Catalogue/COTS. Only a fraction of a percentage of KEMET's capacitors are specially designed for a particular customer/application. Rather, like the rest of the industry, KEMET has detailed catalog/COTS capacitors, with hundreds of different types of capacitors that can be ordered in thousands of different configurations. This is done primarily by use of "smart" part number naming conventions, where each digit/character in the part number corresponds to particular physical or electrical parameters, or test, quality control criteria. These catalogue/COTS capacitors include capacitors meeting MILSPEC (or "MIL-PRF") requirements for high reliability capacitors.[2] The MILSPECs themselves are general in nature in that they also follow smart part number naming conventions, where the specific physical electrical parameters and testing requirements of the part are set forth in the part number.

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[2] There are a number of MILSPECs applicable to capacitors. *See, e.g.*: http://www.interfacebus.com/Design_Capacitors_MIL.html. (MIL-PRF capacitors are in general more robust in design than non-high reliability applications. However, in terms of technological advancement, these capacitors meeting MIL-PRF requirements are, particularly in the case of ceramic capacitors, generations behind modern commercial capacitors in terms of performance and size).

Testing Criteria for High-Reliability Capacitors. When a customer orders a catalog high-reliability commercial or MILSPEC capacitor, the type of capacitor and part number will set the test criteria under the applicable civil or MILSPEC specification. These tests may include mechanical shock, thermal shock, and life test/voltage conditioning. In addition, this will determine the quality control level (*e.g.,* percentage of a particular batch that may be subject to the test). In some cases, a customer may specify additional testing and or increase in the percentage of items in a batch tested. Hence, within a particular line of capacitors the only difference may be the testing criteria, and within a particular batch, only a certain percentage may be tested.

No Clear Criteria for "Space Qualified Testing." Based on internal discussions with KEMET engineers and a review of relevant publications, there is no set or standard test criteria to determine if a particular capacitor is "*qualified through successful testing, for operation at altitudes greater than 100 km above the surface of the earth.*" While there is a clear performance specification for radiation-hardened microelectronic circuits set forth in proposed ECCN 9A515.d, and as currently set forth in ITAR Cat. XV(d), this test criteria has no particular relevance or equivalent for capacitors and other passive electrical devices that are not affected by radiation in the same way as active micro electric circuits.

Upstream Testing. Capacitor manufacturers are among the lowest tier of suppliers as their products are typically bought by subcontractors to be installed in minor components to be integrated into major components, etc. Hence, capacitor manufacturers are often many parties removed from the ultimate end-user. However, KEMET understands that in some cases where its high-reliability capacitors will be used in space applications, minor/major component manufacturers or in some cases the U.S. Government may subject the capacitors themselves or the circuit board or electronic device into which the capacitor is installed into further testing, which may include thermal vacuum testing, radiation exposure, extreme/rapid temperature cycling to replicate rapid temperature changes in space, and mechanical shock or vibration tests to mimic possible conditions in space. The testing is conducted without KEMET's involvement, and as such KEMET is not privy to the testing protocols or results, and would not generally know in advance if such testing was going to take place.

B. UNINTENDED CONSEQUENCES OF RELYING SOLELY ON "TESTING" AS CRITERIA FOR 9X515 CLASSIFICATION

As written, the proposed rules may capture catalog/COTS building block electrical components that are currently classified as EAR99 and subject them to "NS" controls. In the rulemaking on "specially designed," BIS specifically sought to carve out "basic building block" electronic components – stating that *"an example of a component that would not be specially designed was an item that was developed for general or multi-purpose applications. For example, many catalogue electronic components are designed as basic building blocks for other*

equipment, regardless of whether the equipment is military or civilian, controlled or uncontrolled."[3] To exclude these items in the "specially designed" rulemaking, but capture them here, would be inconsistent with the goals of the export control reform. The potential effect of the proposed rule has significant consequences for electrical component manufacturers. For example:

- If a company manufactures EAR99 items abroad, and as a result of the new "testing" definition, the items are reclassified in a higher ECCN with NS controls, the company would unexpectedly require a technology license to continue to manufacture the exact same items abroad. Also, it is unclear what "technology" would actually be licensed in such circumstance (*e.g.*, the "published test criteria")?

- This would cause lack of uniformity in the classification of the same types of products; for example, if only a certain number of parts are tested (*e.g.*, a run of 100 parts with 10% sampling for testing, only ten parts would be classified under ECCNN 9A515 and subject to NS controls, while the other 90 would be EAR99).

- If a U.S. company is currently contracting the manufacture of EAR99 items abroad, these items are currently not subject to the EAR. However, once reclassified in the 9X515 series, the "Foreign Direct Product of U.S. Technology" rules may significantly restrict where such items can be manufactured and sold.

- Unlike microelectronic circuits, for which there appears to be a clearly understood objective test criteria, the absence of a clear definition of what tests or series of tests will qualify an item as "space qualified" will mean that different manufacturers may reach different classifications for the same item.

C. PROPOSED CHANGES

KEMET outlines several proposals to address concerns with the proposed definition of "space qualified". KEMET's view, as set forth in proposal 1 below, is that testing alone should not be a criteria for classification as "space qualified." However, if BIS disagrees, KEMET's proposals 2 and 3 offer solutions to mitigate the significant unintended consequences of the proposed definition. Proposal 4 is a general suggestion regarding clarification of the intent of the Proposed Rule.

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[3] BIS Proposed Rule, "Specially Designed" Definition, 77 *Fed. Reg.* 36409, 36415 (June 19, 2012) ("BIS Proposal").

1. Revise the Proposed Definition of "Space Qualified" by Changing *"or testing"* to *"and testing."*

The U.S. Government has never, to our knowledge, considered testing alone as the sole criteria for classifying an item as "space qualified." Rather, testing has been one factor in determining whether an item is specifically designed for a particular space application. However, in the manufacture of catalog/COTS basic building block electrical components, it is very common for the same exact component to be tested to different criteria. And unless there is a change in the design or manufacturing process to meet that higher level of testing requested by a customer for a particular end-use, the component's classification remains unchanged.

The negative economic impact of this could be significant and does not appear to have been considered by BIS, as it would place U.S. manufacturers at a competitive disadvantage to their foreign competitors. For example, a foreign capacitor manufacturer could design and produce catalogue based capacitors tested to the highest MILSPEC/published reliability standards, and these would not be subject to U.S. export jurisdiction. However, if a U.S. manufacturer produced these same capacitors domestically they may be caught under 9X515 controls. Further, if a U.S. manufacturer wanted to manufacture these capacitors abroad, it would need a technology license, and then the foreign-made capacitors may be caught under 9X515 controls as direct foreign products of U.S. technology. Therefore, we propose revising the proposed definition of "Space Qualified," as follows:

> *''Space-qualified.'' (Cat 3, 6, and 9). Designed, manufactured, ~~or~~ and 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.*~~
>
> ***Note:*** *The terms 'designed', ~~and~~ 'manufactured' ,and 'testing' in this definition are synonymous with ''specially designed.'' Thus, for example, an item that is ''specially designed'' for a spacecraft is deemed to be 'designed' ~~or~~ 'manufactured' and 'tested' for operation at altitudes greater than 100 km and an item that is not ''specially designed'' for a spacecraft is not deemed to have been so 'designed', ~~or~~ 'manufactured, and tested.'*

2. Create a New Subcategory in ECCN 3A991/3A992 for "Space Qualified" Basic Building Block Electrical/Electronic Components.

CCL Category 3 has always been a performance-based catch-all for electronics that are not specifically designed for a particular application, but warrant controls based on performance criteria. The Proposed Rule already proposes to carve out certain generic electronics, which

have "space based" controls already under Cat. 3. For example, certain items that are "space qualified" are controlled under ECCN 3A992(b)(3), and subject only to Anti Terrorism ("AT") controls. Hence, BIS could solve this issue by creating a new ECCN 3A992.d., as follows:

> *3A992.d. basic building block electrical/electronic components, other than microelectronic circuits that are "space qualified" based on testing, but not specially designed for a particular space application.*
>
> *Note: basic building block electrical electronic components means components such as capacitors, inductors, resistors, and thermistors that perform a single electrical function.*

3. Add a Subsection 9X515.y. to Exclude from "NS" Controls Items That Do Not Warrant Such Controls.

The Department of Defense Report to Controls for FY 2010 ("DOD Report") specifically recommended adoption of subsection "y" to the 9X515 series that would not be subject to "NS" controls but only subject to AT controls. We understand that National Defense Authorization Act for FY 2013 Section 1261(c) essentially prohibits any item removed from the ITAR from being exported to the People's Republic of China, North Korea, and other state sponsors of terror. And we infer that this constraint may have led to the omission of the "y." carve out found in the 600 series. However, to the extent that the Proposed Rule would reclassify items currently in the EAR under 9X514, we suggest, adding the y.99 as proposed in the DOD Report. Further, we suggest adding:

> *y.98 parts and single function basic building block electronic components, such as a resistor, capacitor, inductor, or thermistor, not specially designed for operation at altitudes greater than 100 km above the surface of the earth, that would be classified as EAR99 but are deemed "space qualified" solely based on standard published test criteria (e.g., shock, vibration, temperature range testing).*
>
> *Note: .y98 is intended to capture parts and basic building block electronic components that were/would be classifiable as EAR99, but for the additional testing.*

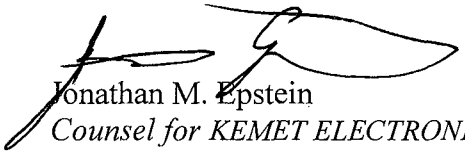
4. Make Clear through Preamble, or Note, that The Rule Is Not Intended to Expand Controls over Items Not Currently on the CCL.

We do not believe the BIS intended to subject items currently classified/classifiable as EAR99 in the new 9X515 series. Given the ambiguity in the definition of "space qualified" and the test criteria, we believe it would be useful for BIS to provide specific discussion, and state in unequivocal terms, that the new 9X515 series only applies to items that would otherwise have been classifiable under the ITAR and is not intended to subject items currently classified as EAR99 to higher controls.

Thank you for your consideration of these comments. If you have any questions, please contact the undersigned at (202) 828-1870 or jonathan.epstein@hklaw.com.

Sincerely,

HOLLAND & KNIGHT LLP



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