



U.S. Department of Homeland Security
Washington, DC 20229

U.S. Customs and Border Protection

January 30, 2018

HQ H282390

OT:RR:CTF:VS H282390 YAG

CATEGORY: Origin

Ms. Carolyn Muhlstein
Senior Manager, Global Customs
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134

RE: U.S. Government Procurement; Country of Origin of Ethernet Switch; Substantial Transformation

Dear Ms. Muhlstein:

This is in response to your letter, dated May 6, 2016, on behalf of Cisco Systems, Inc. ("Cisco"), requesting a final determination concerning the country of origin of Cisco's Nyquist Ethernet Switch ("NES"), pursuant to subpart B of Part 177, U.S. Customs and Border Protection ("CBP") Regulations (19 C.F.R. § 177.21, *et seq.*). As a domestic importer of merchandise, Cisco is a party-at-interest within the meaning of 19 C.F.R. § 177.22(d)(1) and is entitled to request this final determination. In addition, we have reviewed and grant the request for confidentiality pursuant to 19 C.F.R. § 177.2(b)(7), with respect to certain information submitted.

FACTS:

Cisco plans to import the NES from Mexico. The NES is designed to interconnect devices on a computer network, while offering new capabilities, such as enabling new applications, differentiated security, dense wireless, and simplified and diverse network architecture. Each NES consists of one or more printed circuit board assemblies ("PCBA"), two power supplies, an uplink module, a protective metal housing, and ancillary devices to support additional features. The NES is configured with Cisco's configuration data. The configuration data programs the logic gates of the hardware components on the PCBA, which imparts physical changes to the patterns of interconnections in the hardware circuitry, defining the behavior of each component. The NES operates using Cisco's Polaris Operating System Software ("Polaris OS").

In China, PCBAs are manufactured using: application specific integrated circuit (“ASIC”) components, which are assembled to final form in Korea incorporating materials from Taiwan and Japan in a process that takes between 12 and 25 weeks; central processing unit (“CPU”) components from Taiwan; synchronous dynamic random access memory (“SDRAM”) components from Taiwan or Korea; and, flash components from Korea and China. The PCBAs are tested to ensure that the PCBA components can properly interact with one another, and they are packaged and shipped to Mexico.

In Mexico, the following operations take place:

1. One or more PCBAs are installed into the NES chassis.
2. Two power supplies are installed in the NES chassis.
3. One uplink module is installed in the NES chassis.
4. Ancillary devices that support additional NES features are installed into the chassis.
5. A metal housing is added to complete the NES chassis assembly.
6. The power-on and bootloader initialization take place to activate the power system and fan modules of the NES, followed by the activation and preliminary testing of the CPU, ASIC, and ancillary devices.
7. The Polaris OS and configuration data developed in the United States are loaded onto a non-volatile flash memory, and then pushed out to the components of the PCBA.
8. The NES is tested to ensure the product functions as designed.

Cisco states that the Polaris OS and configuration data are downloaded onto the NES using in-circuit programming. According to Cisco, traditionally, each component of a PCBA (e.g., ASICs) is completely programmed at or prior to assembly onto the PCBA; however, with in-circuit programming the hardware components are designed to be programmed after the PCBA is completely assembled. Cisco states that while the Polaris OS and configuration data are simultaneously downloaded onto the NES through the in-circuit programming, the Polaris OS and configuration data have different purposes and affect the NES differently and in sequence. Cisco explains that the configuration data does not operate on the hardware in the manner that the Polaris OS does. Rather, the configuration data completes the hardware programming, and the Polaris OS runs on the completed hardware.

According to Cisco, the PCBAs will have no commercial functionality when exported from China to Mexico because without the configuration data and the Polaris OS, the NES cannot function as intended. Cisco states that the NES will have large quantities of configurable elements, which require the configuration data to provide the firmware, modes and configuration settings, timing parameters, and physical properties for the components to function in the NES. Cisco states that the Polaris OS will provide I/O processor, route processor, and forwarding processor capabilities to the hardware, allowing the components to communicate with each other. Cisco notes that approximately 95 percent of the configuration data and 70 to 80 percent of the software code that will be loaded onto the NES in Mexico will be completely new and tailored based on customer needs and specifications.

ISSUE:

What is the country of origin of the NES for purposes of U.S. Government procurement?

LAW AND ANALYSIS:

CBP issues country of origin advisory rulings and final determinations as to whether an article is or would be a product of a designated country or instrumentality for the purposes of granting waivers of certain “Buy American” restrictions in U.S. law or practice for products offered for sale to the U.S. Government, pursuant to subpart B of Part 177, 19 C.F.R. § 177.21 *et seq.*, which implements Title III of the Trade Agreements Act of 1979, as amended (19 U.S.C. § 2511 *et seq.*).

Under the rule of origin set forth under 19 U.S.C. § 2518(4)(B):

An article is a product of a country or instrumentality only if (i) it is wholly the growth, product, or manufacture of that country or instrumentality, or (ii) in the case of an article which consists in whole or in part of materials from another country or instrumentality, it has been substantially transformed into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was so transformed.

See also 19 C.F.R. § 177.22(a). In order to determine whether a substantial transformation occurs when the components of various origins are assembled to form completed articles, CBP considers the totality of the circumstances and makes decisions on a case-by-case basis.

In *Data General v. United States*, 4 C.I.T. 182 (1982), the court determined that the programming of a foreign PROM (“Programmable Read-Only Memory” chip) in the United States substantially transformed the PROM into a U.S. article. In the United States, the programming bestowed upon each integrated circuit its electronic function, that is, its “memory” which could be retrieved. A distinct physical change was effected in the PROM by the opening or closing of the fuses, depending on the method of programming. The essence of the article, its interconnections or stored memory, was established by programming. *See also, Texas Instruments v. United States*, 681 F.2d 778, 782 (CCPA 1982) (stating the substantial transformation issue is a “mixed question of technology and customs law”).

Accordingly, the programming of a device that defines its use generally constitutes substantial transformation. *See* Headquarters Ruling (“HQ”) HQ 735027, dated September 7, 1993 (programming blank media (EEPROM) with instructions that allow it to perform certain functions that prevent piracy of software constitutes a substantial transformation); *but see* HQ 734518, dated June 28, 1993 (motherboards are not substantially transformed by the implanting of the central processing unit on the board because, whereas in *Data General* use was being assigned to the PROM, the use of the motherboard had already been determined when the importer imported it).

Cisco argues that the country of origin of the NES will be Mexico because the final assembly of the NES and installation of the Polaris OS and configuration data onto the NES in Mexico will substantially transform the PCBA into the NES. While the configuration data is specific to the NES, Cisco notes that the ASIC is not, and can be used in other Cisco products with different configuration data. Additionally, Cisco states that the Polaris OS allows the NES to switch and route packets, which is the critical functional element of the NES. Cisco states that the configuration data physically changes the electrical values of the logic gates present in the ASICs and other components, by connecting the gates in combinations that tell the components how to function and communicate within the system. Cisco argues that the configuration data installed on the NES should be distinguished from software installations because the configuration data completes the hardware programming, physically changing the hardware itself. Cisco states the software's incorporation onto the NES is different because it runs on the completed hardware as opposed to being a part of the hardware itself.

Cisco cites HQ 563012, dated May 4, 2004, in support of its position. In HQ 563012, CBP held that the PCBA and casing that were manufactured for a switch in China, were substantially transformed in the United States or Hong Kong, where U.S.-origin software was loaded, and the PCBA was further assembled with a power supply, fans, and an A/C filter of various origins to form the final fabric switch. CBP noted that in addition to the actual assembly, the configuration and software download operations performed in either Hong Kong or in the United States transformed the switch from a non-functional device into a fabric switch that was capable of performing various storage network functions.

Similar to the scenario in HQ 563012, where Hong Kong was found to be the origin, in this case, the major components of the NES, particularly the PCBA comprised of the ASIC, CPU, SDRAM, and flash components, will be manufactured in China, and then shipped to another country where the final assembly (adding the casing, power supply, uplink modules, and ancillary devices to the PCBA), software loading, configuration, and testing take place. Here, the other country is Mexico, which is different from the country where the U.S.-origin software is developed. While CBP has normally focused on where the origin of the software and where the programming took place, applying CBP's precedent in HQ 563012 to Cisco's manufacturing operations in Mexico, we find that the PCBAs from China will be substantially transformed by the final assembly, software loading, configuration, and testing operations in Mexico, and thus the country of origin for purposes of U.S. Government procurement will be Mexico.¹

¹ See HQ H175415, dated October 4, 2011 (CBP held that imported Ethernet switches underwent a substantial transformation after U.S.-origin software was downloaded onto the devices' flash memory in the United States, which allowed the devices to function); *see also* HQ H052325, dated March 31, 2009 (holding that imported network devices underwent a substantial transformation in the United States after U.S.-origin software was downloaded onto the devices in the United States, which gave the devices their functionality); and, HQ H034843, dated May 5, 2009 (holding that Chinese USB flash drives underwent a substantial transformation in Israel when Israeli-origin software was loaded onto the devices, which made the devices functional). CBP has also held that when software is programmed in one country, and loaded onto a switch in different countries, the process of loading the software is not a sufficient operation by itself to result in a substantial transformation. *See* HQ H241177, dated December 3, 2013; and, HQ H240199, dated March 10, 2015.

HOLDING:

Based on the facts provided, the PCBAs from China will be substantially transformed into the NES by the processes that take place in Mexico. As such, the NES will be considered a product of Mexico for purposes of U.S. Government procurement.

Notice of this final determination will be given in the Federal Register, as required by 19 C.F.R. § 177.29. Any party-at-interest other than the party which requested this final determination may request, pursuant to 19 C.F.R. § 177.31, that CBP reexamine the matter anew and issue a new final determination. Pursuant to 19 C.F.R. § 177.30, any party-at-interest may, within 30 days of publication of the Federal Register Notice referenced above, seek judicial review of this final determination before the Court of International Trade.

Sincerely,

Alice A. Kipel, Executive Director
Regulations and Rulings
Office of Trade