



U.S. Customs and
Border Protection

HQ H303612

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CATEGORY: Origin

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RE: Country of origin of the WA Triple Slimline Low Noise Block (LNB)

Dear Mr. Tuttle:

This is in response to your request on behalf of your client, Global Invacom, for a prospective ruling regarding the country of origin of the WA Triple Slimline Low Noise Block (hereinafter, LNB).

FACTS:

An LNB is a device mounted on satellite dishes to receive television broadcast signals from satellites. You indicate that Global Invacom currently sources the LNBs from China.

You submit that the LNB is completely assembled in the Philippines. The assembly process involves populating a printed circuit board with 122 components, including design-specified capacitors, inductors, resistors, diodes, transistors, integrated circuits, ferrite, crystals, and a Broadcom chip. In addition, two antennas are mounted on the printed circuit board assembly (PCBA) within the LNB to collect television broadcast signals from satellites. While the majority of the components are sourced from various suppliers in China, a limited number may be sourced from other countries.

After populating the PCBA panel, it is passed through an oven causing the soldering paste used to join the components to the panel to liquefy, bonding the components to the board and establishing electrical connectivity of all components of the PCBA. Then, the PCBA panel is sent through a cropping machine which cuts the panel creating four individual PCBAs, ready for use in the LNB. The PCBAs are tested. The last step in processing the PCBA for use in the LNB is transferring the United Kingdom (U.K.) programming to the PCBA component Microchip device. The Broadcom chip is assembled in Taiwan and programmed with operating software in Taiwan. The Broadcom chip contains a lower-level software interface. The Global Invacom software engineers in the U.K. write firmware to provide it with a higher level of functionality. That firmware is transferred to the Broadcom chip as part of the assembly process in the Philippines. The U.K. programming provides coding for further intercomponent communication and tests to follow. You state that:

The firmware is transferred to the Microchip via Flash. Firmware loaded onto the device is used to perform basic booting and testing of the PCBA system/module functionality, and later after installation, to monitor intracomponent communication, and communication with the Broadcom chip – necessary functions to the operation of the LNBs.

You indicate that the Broadcom chip:

... is designed specifically for satellite communications between the receiving waveguide and the set-top receiver. It contains a CPU, memory, switches and is static, awaiting software control. The Broadcom chip monitors power, communicates with PCBA components, provides the oscillating frequency for the heterodyning frequency mixing, controls the band pass filter, manages resources, and provides tuning and switching when signaled by the set-top receiver.

The LNB converts the incoming signals received from satellites into intermediate frequency signals (IF). The IF signals are processed by software (firmware) on the PCBA within the LNB. As you explain in your submission:

Software (firmware) processes the incoming IF, communicates with the PCBA-mounted Broadcom chip, decrypting and decompressing the signal from the satellite. The processed signal emerges from the LNB sent out through F-type connector to the set-top TV receiver (or may be built into the TV) through standard coaxial cable of 75 ohms, type RG-6/U or RG-7.

The remaining components of the LNB include a base casting, which is an aluminum cast component manufactured in China. The LNB features three feed horns. A feed horn "is the part of a satellite dish system which gathers the reflected signal from

the dish and focuses it towards the LNB.”¹ The three feed horns of the LNB at issue collect downlink signals from three geostationary satellites in three distinct orbital slots for North America, referred to as the Western Arc, or WA. The base casting component “provides the support for the components of the LNB and contains the waveguide (associated with the design of the feed horns).” The aluminum base casting is designed to protect the PCBA and internal environment of the LNB from outside elements. The feed horns are a region of the aluminum casting and function to collect the satellite signal and send them to the antenna in the feed horns. The aluminum cast components are inspected. The aluminum cast components, the PCBA, F-type connectors, and various fixation devices (j-pins, F-type pins, screws, etc.), are assembled to form the LNB. The assembly process includes the placement of thermal compound to the base casting “to promote efficient heat transfers from PCBA components, specifically the Broadcom chip and Power Supply chip. . . .” In addition, certain pins are soldered to the PCBA. The LNB is powered through the AC-supplied set-top box connected to the LNB using the same coaxial cable that carries the signals from the LNB.

The LNB is subjected to automated testing of its software functions for flash image programming, manufacturing serial number programming, DC tests, and communication tests. If the LNB passes these tests, it is subjected to a series of tests to ensure it is in working order. After the testing is complete, the housing of the LNB is sealed by robotically applied sealant placed between the base casting and the matrix (back cover) to produce a water tight sealant. Sealant is place over all exposed screw heads on the matrix. The three feed horns have O-rings and caps fitted over them to protect them from the elements. The entire LNB assembly is pressure tested to look for leaks. A large self-adhesive label/logo is affixed to the finished product.

The completed LNB is subject to a finalization process which “is the process of locking the unit flash and applying the customer serial number, and the date of manufacturer.” The LNB is tested and if it passes, a rear label is printed and applied to the casting recess. The brand sticker is applied at this time. You indicate that once the finalization process is complete, “there are only a handful of company engineers who can unlock the unit hereafter.”

ISSUE:

What is the country of origin of the LNB?

LAW AND ANALYSIS:

Section 304 of the Tariff Act of 1930, as amended (19 U.S.C. 1304), provides that unless excepted, every article of foreign origin imported into the United States shall

¹ See <http://www.tech-faq.com/feedhorn.html>.

be marked in a conspicuous place as legibly, indelibly, and permanently as the nature of the article (or container) will permit in such a manner as to indicate to an ultimate purchaser in the United States the English name of the country of origin of the article. Congressional intent in enacting 19 U.S.C. 1304 was that the ultimate purchaser should be able to know by an inspection of the markings on the imported goods the country of which the good is the product. "The evident purpose is to mark the goods so at the time of purchase the ultimate purchaser may, by knowing where the goods were produced, be able to buy or refuse to buy them, if such marking should influence his will." *United States v. Friedlaender & Co.*, 27 C.C.P.A. 297 at 302 (1940).

Part 134, Customs and Border Protection (CBP) Regulations (19 C.F.R. 134), implements the country of origin marking requirements and exceptions of 19 U.S.C. § 1304. Section 134.1(b), CBP Regulations (19 C.F.R. 134.1(b)), defines "country of origin" as "the country of manufacture, production, or growth of any article of foreign origin entering the United States. Further work or material added to an article in another country must effect a substantial transformation in order to render such other country the "country of origin" within the meaning of [the marking regulations]. . . ." A substantial transformation is said to have occurred when an article emerges from a manufacturing process with a name, character, or use which differs from the original material subjected to the process. *United States v. Gibson-Thomsen Co., Inc.*, 27 C.C.P.A. 267 (C.A.D. 98) (1940); *Texas Instruments v. United States*, 681 F.2d 778, 782 (1982).

In order to determine whether a substantial transformation occurs when components of various origins are assembled into completed products, CBP considers the totality of the circumstances and makes such determinations on a case-by-case basis. The country of origin of the item's components, extent of the processing that occurs within a country, and whether such processing renders a product with a new name, character, and use are primary considerations in such cases. Additionally, factors such as the resources expended on product design and development, the extent and nature of post-assembly inspection and testing procedures, and worker skill required during the actual manufacturing process will be considered when determining whether a substantial transformation has occurred. No one factor is determinative.

In Headquarters Ruling Letter (HQ) H170315, dated July 28, 2011, CBP was asked to determine the country of origin of satellite telephones in one scenario involving the manufacture of PCBs in one country and the programming of the PCBs with second country software. The application and transceiver boards (PCBs) were assembled and programmed in Malaysia with U.K.-origin software. The PCBs were then shipped to Singapore to be further assembled with other components, such as covers, housing, an antenna, and cables, into the complete satellite telephones. CBP found that the country where the PCBs were assembled and programmed, was the country in which the last substantial transformation occurred, and thus the country of origin was Malaysia.

In this case, the PCB is assembled in the Philippines and programmed with U.K. software in the Philippines. Unlike in HQ H170315, the programmed PCB of the LNB is assembled with the remaining components of the LNB in the Philippines to form the finished product. Based upon the extensive assembly processes in the Philippines and the transference of the U.K.-origin programming to the PCB in the Philippines, CBP finds that the processing in the Philippines results in a substantial transformation of the various components imported into the Philippines and processed to result in the finished LNB.

HOLDING:

The country of origin of the LNB at issue, and manufactured as described above, is the Philippines. Please note that 19 C.F.R. § 177.9(b)(1) provides that “[e]ach ruling letter is issued on the assumption that all of the information furnished in connection with the ruling request and incorporated in the ruling letter, either directly, by reference, or by implication, is accurate and complete in every material respect. The application of a ruling letter by a CBP field office to the transaction to which it is purported to relate is subject to the verification of the facts incorporated in the ruling letter, a comparison of the transaction described therein to the actual transaction, and the satisfaction of any conditions on which the ruling was based.”

A copy of this ruling letter should be attached to the entry documents filed at the time the goods are entered. If the documents have been filed without a copy of this ruling, it should be brought to the attention of the CBP officer handling the transaction.

Sincerely,



Monika R. Brenner, Chief
Valuation & Special Classification Branch