

*What Every Member of the  
Trade Community Should Know About:*

# Classification of Flat Panel Displays



AN INFORMED COMPLIANCE PUBLICATION

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**U.S. CUSTOMS and BORDER PROTECTION**

**NOTICE:**

This publication is intended to provide guidance and information to the trade community. It reflects the position on or interpretation of the applicable laws or regulations by U.S. Customs and Border Protection (CBP) as of the date of publication, which is shown on the front cover. It does not in any way replace or supersede those laws or regulations. Only the latest official version of the laws or regulations is authoritative.

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**PRINTING NOTE:**

This publication was designed for electronic distribution via the CBP website (<http://www.cbp.gov>) and is being distributed in a variety of formats. It was originally set up in Microsoft Word97<sup>®</sup>. Pagination and margins in downloaded versions may vary depending upon which word processor or printer you use. If you wish to maintain the original settings, you may wish to download the .pdf version, which can then be printed using the freely available Adobe Acrobat Reader<sup>®</sup>.

## PREFACE

On December 8, 1993, Title VI of the North American Free Trade Agreement Implementation Act (Pub. L. 103-182, 107 Stat. 2057), also known as the Customs Modernization or “Mod” Act, became effective. These provisions amended many sections of the Tariff Act of 1930 and related laws.

Two new concepts that emerge from the Mod Act are “***informed compliance***” and “***shared responsibility***,” which are premised on the idea that in order to maximize voluntary compliance with laws and regulations of U.S. Customs and Border Protection, the trade community needs to be clearly and completely informed of its legal obligations. Accordingly, the Mod Act imposes a greater obligation on CBP to provide the public with improved information concerning the trade community’s rights and responsibilities under customs regulations and related laws. In addition, both the trade and U.S. Customs and Border Protection share responsibility for carrying out these requirements. For example, under Section 484 of the Tariff Act, as amended (19 U.S.C. 1484), the importer of record is responsible for using reasonable care to enter, classify and determine the value of imported merchandise and to provide any other information necessary to enable U.S. Customs and Border Protection to properly assess duties, collect accurate statistics, and determine whether other applicable legal requirements, if any, have been met. CBP is then responsible for fixing the final classification and value of the merchandise. An importer of record’s failure to exercise reasonable care could delay release of the merchandise and, in some cases, could result in the imposition of penalties.

The Office of Regulations and Rulings (ORR) has been given a major role in meeting the informed compliance responsibilities of U.S. Customs and Border Protection. In order to provide information to the public, CBP has issued a series of informed compliance publications, and videos, on new or revised requirements, regulations or procedures, and a variety of classification and valuation issues.

This publication, prepared by the National Commodity Specialist Division, ORR, is a study of the classification of flat panel displays. “Classification of Flat Panel Displays” provides guidance regarding the classification of imported merchandise. We sincerely hope that this material, together with seminars and increased access to rulings of U.S. Customs and Border Protection, will help the trade community to improve voluntary compliance with customs laws and to understand the relevant administrative processes.

The material in this publication is provided for general information purposes only. Because many complicated factors can be involved in customs issues, an importer may wish to obtain a ruling under Regulations of U.S. Customs and Border Protection, 19 C.F.R. Part 177, or to obtain advice from an expert who specializes in customs matters, for example, a licensed customs broker, attorney or consultant.

Comments and suggestions are welcomed and should be addressed to the Assistant Commissioner at the Office of Regulations and Rulings, U.S. Customs and Border Protection, 1300 Pennsylvania Avenue, (Mint Annex) NW, Washington, D.C. 20229.

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## INTRODUCTION

This publication discusses the tariff classification and related issues for flat panel displays. Flat panel displays are rapidly becoming the medium for the visual presentation of electronic data and information. Since their humble beginnings approximately 20 years ago, they have steadily advanced in technology and affordability, and, consequently, in popularity. Today, they are commonplace in a wide range of products from personal computers to camcorders to industrial equipment. In short, they are electronic devices that are designed to display text or graphics through the conversion of information received as electrical signals into visible images on a display glass. As opposed to the conventional cathode ray tube (CRT), flat panel displays are lightweight and more portable, thus enhancing their practical use in a technology driven environment.

## TERMINOLOGY

For purposes of this discussion, the term “flat panel display module” will be used to refer to a complete flat panel display. U.S. Customs has defined a flat panel display module as follows:

A thin flat electronic device consisting of a glass sandwich and associated electronic systems, used to display information in text (alphanumeric), graphic, or image form. It converts information received as electronic signals into images on a screen. The glass panels contain rows and columns of dot-like pixels (picture elements) that are activated or deactivated by an electronic impulse to make the images.

A flat panel display module generally consists of the following components:

1. *Display Glass Assembly* – Processed glass substrate that typically incorporates patterned row and column electrodes, a material that reacts to a change in voltage (e.g., liquid crystal, gas, film phosphor), and contact pads for interconnecting the drive electronics to each row and column electrode.
2. *Drive Electronics* – Integrated circuits that provide voltages to drive the row and column electrodes. Drive electronics are customized according to the type, size and capability of the glass display assembly.
3. *Control Electronics* – Integrated circuits that decode and interpret the signals sent by the end-user system and transmit the signals to the drive electronics. Control electronics are also customized for the individual display.
4. *Mechanical Package* – The frame that mounts the printed circuit boards for the drive and control electronics to the display glass. The mechanical

package also adds strength and protection to the display glass and provides the means whereby the user mounts the display into the end-user system.

5. *Power Supply* – An electronic circuit that provides appropriate voltages for the flat panel display. Many of the voltages required by the displays are not standard and require customized power supplies. The power supply may be placed on a module separate from the other electronic boards.

**There are several types of commercially known flat panel display modules. U.S. Customs has applied the following definitions, based on the material used to display the visible character/graphic information:**

**Liquid Crystal (LCD)** – Incorporates liquid crystal display fluids in a glass envelope with coatings on the internal glass. This fluid “lights up” when electric current interacts with the fluid.

**Light Emitting Diode (LED)** – Uses a semiconductor diode that emits light when charged. LED’s are usually red.

**Electroluminescent (EL)** – Zinc sulfide or other materials that emit fluorescence when a current is applied.

**Vacuum Fluorescent Display (VFD)** – Consists of a cathode, grid, and anode sealed in a high-vacuum glass envelope. The cathode is a directly heated, fine tungsten wire coated by an alkaline earth metal oxide. The grid is a thin metal mesh, and the anode is a segment or dot formed as a conductive electrode on which phosphor is printed. The shape of the phosphor segment or the arrangement of illuminated phosphor dots creates the characters or symbols.

**Gas Plasma** – Electrical current interacts with electrodes causing ultraviolet radiation. This activates red, green and blue phosphor, thereby producing colored light.

## **CLASSIFICATION**

In 1997, U.S. Customs conducted an extensive review of the classification, under the Harmonized Tariff Schedule of the United States (HTSUS), of flat panel display modules and related products. As a result, a number of Headquarters rulings have been issued that have addressed this issue. Accordingly, the following guidelines should now be used when classifying all flat panel display modules. It should be noted that although certain **finished** products, such as video monitors, may be classified in one of the HTSUS headings mentioned below, these guidelines only pertain to the classification of display modules that are incorporated into such finished products.

## Heading 8471, HTSUS

Flat panel display modules, i.e., a flat panel, regardless of the type (LED, LCD, EL, or other), with row and column drivers, are classifiable under subheadings 8471.60.30 and 8471.60.45 only if they meet the following requirements as set forth in Note 5(b), Chapter 84, HTSUS:

- They are connectable to a central processing unit (CPU)
- They are capable of receiving data from an automatic data processing (ADP) system
- They are principally or solely used in an ADP system

The applicable HTSUS provisions (italicized and in bold) are as follows:

8471		Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included (con.):
8471.60		Input or output units, whether or not containing storage units in the same housing:
8471.60.10		Combined input/output units
		With cathode-ray tube (CRT):
	35	Color
	65	Other
	95	Other
		Other:
8471.60.20	00	Keyboards
		<b>Display units:</b>
<b>8471.60.30</b>	<b>00</b>	<b>Without cathode-ray tube (CRT), having a visual display diagonal not exceeding 30.5 cm</b>
		Other:
8471.60.35	00	With color cathode-ray tube (CRT)
<b>8471.60.45</b>		<b>Other</b>
	40	With cathode-ray tube (CRT)
	<b>80</b>	<b>Other</b>

The issue of principal/sole use has been difficult to ascertain in the past. As a result of this review by U.S. Customs, it has been determined that only specific size flat panel display modules are principally used in ADP systems and conform to industry standards.

In HQ 957795, dated March 3, 1997, the following pixel size configurations were determined to be principally used in ADP:

640x480 (VGA - Video Graphics Array)  
640x400 (EGA - Enhanced Graphics Adapter)  
640x350 (EGA)  
640x200(CGA - Color Graphics Adapter)

In addition, HQ 959945, dated November 19, 1997, ruled that

1024x760 (XGA - Extended Graphics Array),  
800x600 (SVGA - Super Video Graphics Array)  
480x320 (1/2 VGA)

were also classifiable in heading 8471 based on principal use. It should be noted that principal use for the 480x320 (1/2 VGA) was based on limited information for only two models of a Personal Digital Assistant (PDA).

The aforementioned rulings were based on evidence that displays which met certain standards were "...of a kind solely or principally used in an automatic data processing system" (Chapter 84, Note 5(B)(a)). These rulings were issued in 1997. With regard to principal use, Additional U.S. Rule of Interpretation 1(a), HTSUSA, provides that "a tariff classification controlled by use (other than actual use) is to be determined in accordance with the use in the United States at, or immediately prior to, the date of importation, of goods of that class or kind to which the imported goods belong, and the controlling use is the principal use." Principal use can and does change. Generally, in order to determine principal use, U.S. Customs relies on the facts and these decisions are made on a case-by-case basis. However, for flat panel displays current industry information indicates that both CGA and EGA video display standards are obsolete for use with automatic data processing systems. Therefore, they are no longer considered of a kind solely or principally used with these systems. Since HQ 957795 is correct for the date it was issued, it will not be revoked or modified. However, it should no longer be followed for displays that are designed to meet CGA and EGA standards.

## **Heading 8531, HTSUS**

In order for a flat panel display module to be considered an indicator panel classifiable under subheadings 8531.20.00 (LCD/LED) or 8531.80.00 (Other), there is one fundamental requirement. Since indicator panels are listed as an example of a type of visual signaling apparatus under heading 8531, an indicator panel classified under subheading 8531.20.00 or 8531.80.00 must be of the type that is *principally used to perform a signaling function*. With respect to indicator panels, the term "signaling" has been ruled on as the providing of certain limited indication information to a user, such as measurement, coordinates, flow, etc. In this regard, HQ 955062, dated March 21, 1994, should be noted. Products such as flat panel display modules for bar code scanners,

price link displays and global positioning devices are among the items considered classifiable under subheadings 8531.20.00 and 8531.80.00 based on their use as a type of signaling device.

The applicable HTSUS provisions (italicized and in bold) are as follows:

8531	Electric sound or visual signaling apparatus (for example, bells, sirens, indicator panels, burglar or fire alarms), other than those of heading 8512 or 8530; parts thereof: * * *
<b>8531.20.00</b>	<b><i>Indicator panels incorporating liquid crystal devices (LCD's) or light emitting diodes (LED's)</i></b>
<b>20</b>	<b><i>Incorporating LCD's</i></b>
<b>40</b>	<b><i>Other</i></b>
<b>8531.80.00</b>	Other apparatus:
	<b><i>Indicator panels:</i></b>
<b>10</b>	<b><i>Incorporating electric discharge (fluorescent) devices</i></b>
<b>25</b>	<b><i>Other</i></b>

During the process of establishing a principal use standard for flat panel display modules used in ADP applications, U.S. Customs issued several rulings that classified certain “graphic” display modules in heading 8531 based on the finding that the principal use of those particular pixel configurations was in applications that were considered “signaling.” The following rulings provide examples of the types of “graphic” flat panel display modules that are classifiable in either subheadings 8531.20.00 or 8531.80.00:

HQ 959945  
HQ 960110  
HQ 960317  
HQ 960315  
HQ 960314

The information supplied by these modules was determined to be of the type that is considered of a limited indicating nature. Although the concept of “limited indication” can be somewhat subjective, the body of rulings on this issue should provide concrete examples as to the type of “graphic” display modules considered classifiable in subheadings 8531.20.00 or 8531.80.00.

In addition to the “graphic” type display module, there is a type that provides information in an alpha/numeric format. This is referred to as a “character” display module. In HQ 952973, dated August 5, 1993, it was held that only those “character” display modules that are limited by design and function to that of “signaling” are classifiable in heading 8531. Furthermore, this ruling established a guideline for “limited by design and function” by stating that “character” display modules having 80 or less

characters are restricted to signaling functions by virtue of their operational limitations. An example of this can be found in HQ 960608, dated November 19, 1997, in which several 4X40 character (4 lines, 40 characters per line) LCD modules did not meet the terms of heading 8531 because they exceeded the 80 character limitation.

## Other HTSUS Headings

Flat panel display modules not classifiable in subheadings 8471.60.30 and 8471.60.45, or in subheadings 8531.20.00 and 8531.80.00, are probably classified in either subheading 9013.80 if LCD, or in subheading 8543.89.92 if other than LCD. Heading 9013 covers, in part, Liquid Crystal Devices not constituting articles provided for more specifically in other headings. An LCD module that is not of the size determined to be principally used in ADP applications (heading 8471), or that is not considered an indicator panel (heading 8531), is classifiable in subheading 9013.80 as a liquid crystal device.

The applicable HTSUS provisions (italicized and in bold) are as follows:

9013	Liquid crystal devices not constituting articles provided for more specifically in other headings; lasers, other than laser diodes; other optical appliances and instruments, not specified or included elsewhere in this chapter; parts and accessories thereof:
	***
9013.80	Other devices, appliances and instruments:
9013.80.20 00	Hand magnifiers, magnifying glasses, loupes, thread counters and similar apparatus
9013.80.40 00	Door viewers (door eyes)
<b>9013.80.70 00</b>	<b><i>Flat panel displays other than for articles of heading 8528</i></b>
<b>9013.80.90 00</b>	<b><i>Other</i></b>

Likewise, a flat panel display module *other than an LCD type* that does not meet the requirements for heading 8471 or heading 8531 is classifiable in subheading 8543.89.9200 as an other electrical machine or apparatus,...., not specified or included elsewhere in Chapter 85.

The applicable HTSUS provision (italicized and in bold) is as follows:

8543	Electrical machines and apparatus, having individual functions, not specified or included elsewhere in this chapter; parts thereof:
	***
	Other machines and apparatus:
	***
	Other:

\*\*\*

**8543.89.92 00** Other: Electrical machines with translation or dictionary functions; ***flat panel displays other than for articles of heading 8528***

In addition to complete LCD flat panel display modules, subheading 9013.80 (specifically, 9013.80.90) also applies to the classification of glass sandwiches (sometimes referred to as glass cells or flat panel displays). Glass sandwiches (glass cells/flat panel displays) consist of two pieces of processed glass with a layer of liquid crystal material between the pieces of glass. There are no control electronics (row and column drivers) in a glass sandwich, although, as noted in the Explanatory Notes of the Harmonized Commodity Description and Coding System, electrical connections may or may not be included.

In this regard, *Sharp Microelectronics Technology, Inc. v. United States*, 20 CIT 793 (1996), 932 F. Supp. 1499, aff'd. 122 F. 3d 1446 (Fed. Cir. 1997) should be noted. Sharp's glass cells were designed for use as part of the display screen for a computer. Both the Court of International Trade (CIT) and the Court of Appeals for the Federal Circuit (CAFC) held that these glass cells were classifiable under subheading 9013.80.60, as opposed to parts of ADP apparatus in subheading 8473.30.50. As a result of the Information Technology Agreement (ITA), subheading 9013.80.60 was replaced on July 1, 1997 by subheadings 9013.80.70 and 9013.80.90. Subheading 9013.80.70 applies to LCD flat panel display modules that are for use in articles other than those provided for in heading 8528. Subheading 9013.80.90, described as "other," applies to glass cells/flat panel displays (glass sandwiches), and LCD flat panel display modules for use in articles provided for in heading 8528.

The reference to heading 8528 is due to the fact that LCD flat panel display modules for use with reception apparatus of that heading are classifiable in subheading 9013.80.90. Subheading 8529.90.53 (a parts provision for heading 8528) covers flat panel screen assemblies for various television reception devices. Since the CIT and Headquarters have held that subheading 9013.80 is more specific than a parts provision, subheading 9013.80.90 would apply to an LCD flat panel screen assembly used in television reception apparatus.

## CLASSIFICATION RULINGS

<u>Ruling Number</u>	<u>Date</u>	<u>Description</u>	<u>Classification</u>
HQ 088225	Jan. 31, 1991	LCD for price link display	8531.20.00
HQ 951288	July 7, 1992	LCD's ; 2 line; 16 character 1 line; 64 characters 1 line; 200 characters (*modified HQ 952973)	8531.20.00 9013.80.60* 9013.80.60
HQ 953115	May 10, 1993	LCD's for avionics system	8531.20.00
HQ 952973	Aug. 5, 1993	LCD's; 80 or less characters	8531.20.00

		Over 80 char., no ADP app'l Principal use in ADP	9013.80.60 8471.92.30
HQ 954364	Jan. 27, 1994	LCD's for traffic alert	8531.20.00
HQ 955447	Feb. 9, 1994	LCD's with char. Graphics Glass sandwich	8531.20.00 9013.80.60
HQ 955294	Mar. 18, 1994	LCD's for bar code scan LCD's for GPS system	8531.20.00
HQ 955062	Mar. 21, 1994	LCD's for various app'l	8531.20.00
HQ 952722	Sept. 27, 1994	LCD's for var. app'l	8531.20.00
HQ 957723 (I/A 2/95)	June 2, 1995	Low Character LCD	8531.20.00
HQ 956870	July 27, 1995	LCD Panels for WP	9013.80.60
HQ 957795	Mar. 3, 1997	EL for use in ADP	8471.60.30/45
HQ 960937	Nov. 19, 1997	LCD for Pers. Digital Assistant	8531.20.00
HQ 960284	Nov. 19, 1997	1/4 VGA EL Display	8531.20.00

## **ADDITIONAL INFORMATION**

### **The Internet**

The home page of U.S. Customs and Border Protection on the Internet's World Wide Web, provides the trade community with current, relevant information regarding CBP operations and items of special interest. The site posts information -- which includes proposed regulations, news releases, publications and notices, etc. -- that can be searched, read on-line, printed or downloaded to your personal computer. The web site was established as a trade-friendly mechanism to assist the importing and exporting community. The web site also links to the home pages of many other agencies whose importing or exporting regulations that U.S. Customs and Border Protection helps to enforce. The web site also contains a wealth of information of interest to a broader public than the trade community. For instance, on June 20, 2001, CBP launched the "Know Before You Go" publication and traveler awareness campaign designed to help educate international travelers.

The web address of U.S. Customs and Border Protection is <http://www.cbp.gov>

### **Customs Regulations**

The current edition of *Customs Regulations of the United States* is a loose-leaf, subscription publication available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 512-1800. A bound, 2003 edition of Title 19, *Code of Federal Regulations*, which incorporates all changes to the Regulations as of April 1, 2003, is also available for sale from the same address. All proposed and final regulations are published in the *Federal Register*, which is published daily by the Office of the Federal Register, National Archives and Records Administration, and distributed by the Superintendent of Documents. Information about on-line access to the *Federal Register* may be obtained by calling (202) 512-1530 between 7 a.m. and 5 p.m. Eastern time. These notices are also published in the weekly *Customs Bulletin* described below.

### **Customs Bulletin**

The *Customs Bulletin and Decisions* ("Customs Bulletin") is a weekly publication that contains decisions, rulings, regulatory proposals, notices and other information of interest to the trade community. It also contains decisions issued by the U.S. Court of International Trade, as well as customs-related decisions of the U.S. Court of Appeals for the Federal Circuit. Each year, the Government Printing Office publishes bound volumes of the *Customs Bulletin*. Subscriptions may be purchased from the Superintendent of Documents at the address and phone number listed above.

## **Importing Into the United States**

This publication provides an overview of the importing process and contains general information about import requirements. The February 2002 edition of *Importing Into the United States* contains much new and revised material brought about pursuant to the Customs Modernization Act ("Mod Act"). The Mod Act has fundamentally altered the relationship between importers and U.S. Customs and Border Protection by shifting to the importer the legal responsibility for declaring the value, classification, and rate of duty applicable to entered merchandise.

The February 2002 edition contains a section entitled "Informed Compliance." A key component of informed compliance is the shared responsibility between U.S. Customs and Border Protection and the import community, wherein CBP communicates its requirements to the importer, and the importer, in turn, uses reasonable care to assure that CBP is provided accurate and timely data pertaining to his or her importation.

Single copies may be obtained from local offices of U.S. Customs and Border Protection, or from the Office of Public Affairs, U.S. Customs and Border Protection, 1300 Pennsylvania Avenue NW, Washington, DC 20229. An on-line version is available at the CBP web site. *Importing Into the United States* is also available for sale, in single copies or bulk orders, from the Superintendent of Documents by calling (202) 512-1800, or by mail from the Superintendent of Documents, Government Printing Office, P.O. Box 371954, Pittsburgh, PA 15250-7054.

## **Informed Compliance Publications**

U.S. Customs and Border Protection has prepared a number of Informed Compliance publications in the "*What Every Member of the Trade Community Should Know About:...*" series. Check the Internet web site <http://www.cbp.gov> for current publications.

## Value Publications

*Customs Valuation under the Trade Agreements Act of 1979* is a 96-page book containing a detailed narrative description of the customs valuation system, the customs valuation title of the Trade Agreements Act (§402 of the Tariff Act of 1930, as amended by the Trade Agreements Act of 1979 (19 U.S.C. §1401a)), the Statement of Administrative Action which was sent to the U.S. Congress in conjunction with the TAA, regulations (19 C.F.R. §§152.000-152.108) implementing the valuation system (a few sections of the regulations have been amended subsequent to the publication of the book) and questions and answers concerning the valuation system. A copy may be obtained from U.S. Customs and Border Protection, Office of Regulations and Rulings, Value Branch, 1300 Pennsylvania Avenue, NW, Washington, D.C. 20229.

*Customs Valuation Encyclopedia* (with updates) is comprised of relevant statutory provisions, CBP Regulations implementing the statute, portions of the Customs Valuation Code, judicial precedent, and administrative rulings involving application of valuation law. A copy may be purchased for a nominal charge from the Superintendent of Documents, Government Printing Office, P.O. Box 371954, Pittsburgh, PA 15250-7054. This publication is also available on the Internet web site of U.S. Customs and Border Protection.

The information provided in this publication is for general information purposes only. Recognizing that many complicated factors may be involved in customs issues, an importer may wish to obtain a ruling under CBP Regulations, 19 C.F.R. Part 177, or obtain advice from an expert (such as a licensed Customs Broker, attorney or consultant) who specializes in customs matters. Reliance solely on the general information in this pamphlet may not be considered reasonable care.

Additional information may also be obtained from U.S. Customs and Border Protection ports of entry. Please consult your telephone directory for an office near you. The listing will be found under U.S. Government, Department of Homeland Security.

## **“Your Comments are Important”**

The Small Business and Regulatory Enforcement Ombudsman and 10 regional Fairness Boards were established to receive comments from small businesses about Federal agency enforcement activities and rate each agency’s responsiveness to small business. If you wish to comment on the enforcement actions of U.S. Customs and Border Protection, call 1-888-REG-FAIR (1-888-734-3247).

**REPORT SMUGGLING 1-800-BE-ALERT OR 1-800-NO-DROGA**



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