2017 WCO Knowledge Academy
for Customs and Trade

## Session XI:

# Classification of articles in the HIGH-TECH area

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**WCO Tariff and Trade Affairs Directorate**

WCO Headquarters, Brussels, Belgium
**23 June 2017**

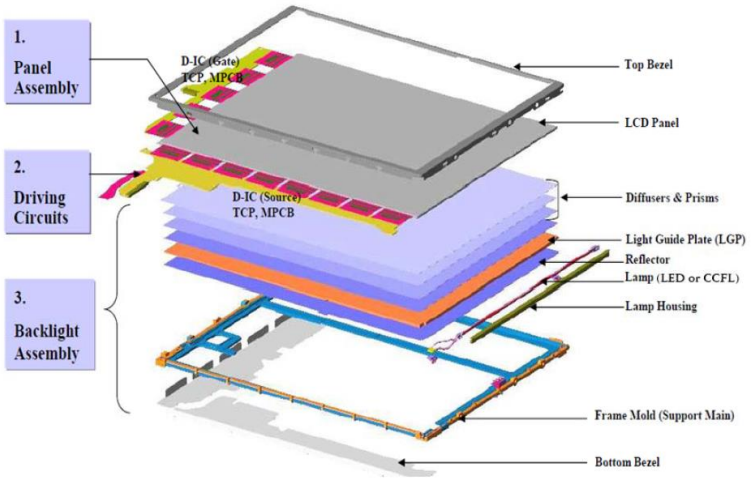
- *Flat panel display modules*
- *Assemblies designed to be mounted into a mobile phone*
- *Hall effect sensor*
- *IGBTs*

- *3D printers*
- *"Hoverboards"*
- *Smoking devices used with new "tobacco" products*
- *Other*

# 2017 WCO Knowledge Academy for Customs and Trade

## Flat panel display modules

### *Possible amendments for 2022*




| MOBILE | NOTE PC | MONITOR | TV & AV |
|---|---|---|---|
|  |  |  |  |
| **85.17** | **84.73** | **85.29** | **85.29** |
|  |  |  |  |


**85.31**

# 2017 WCO Knowledge Academy for Customs and Trade

## Flat panel display modules

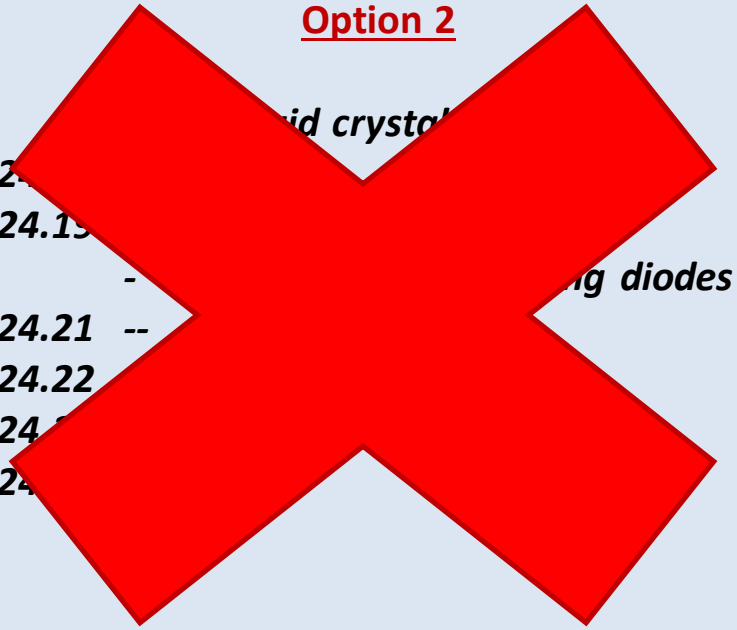
### *For 2022 – Possible new heading 85.24*

***85.24 Flat panel display modules, whether or not incorporating touch-sensitive screens***

**Option 1**

| | | |
|---|---|---|
| | - | *[Without drivers or control circuits] or [Cells] :* |
| *8524.11* | - - | *Of liquid crystals* |
| *8524.12* | - - | *Of organic [light-emitting diodes][electro-luminescense]* |
| *8524.19* | - - | *Other* |
| | - | *Other :* |
| *8524.21* | -- | *Of liquid crystals* |
| *8524.22* | -- | *Of organic [light-emitting diodes][electro-luminescense]* |
| *[8524.23* | -- | *Of light-emitting diodes]* |
| *8524.29* | -- | *Other* |

**Option 2**



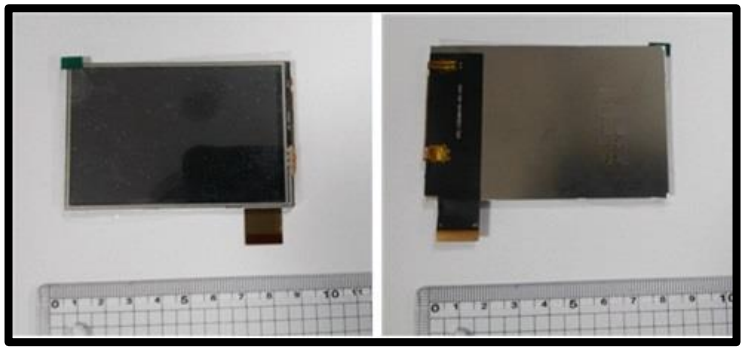
# Flat panel display modules

## *For 2022 – Possible new heading 85.24*

***85.24 Flat panel display modules, whether or not incorporating touch-sensitive screens***

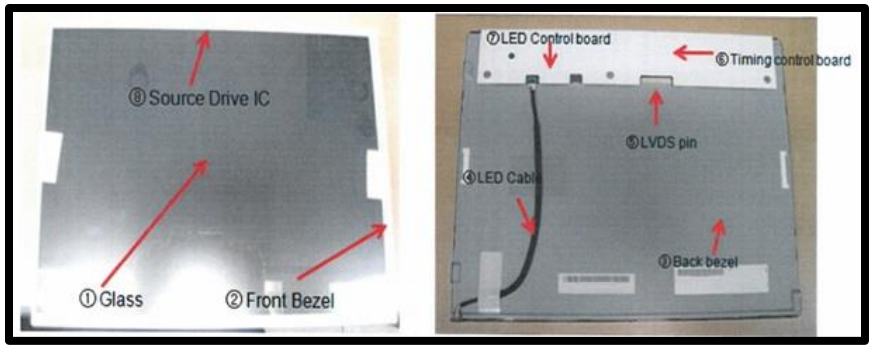
- ***Scope of the new heading***
- ***Legal definition of products covered by the new heading***
- ***Other headings involved – transfer of products to the new heading***

# Flat panel display modules



# 1

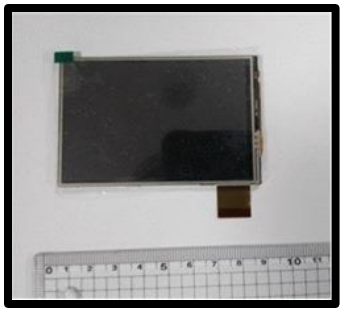
# 2




# 3

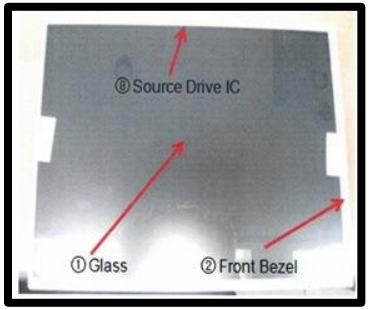
# Flat panel display modules

# 1



# 2

# 3

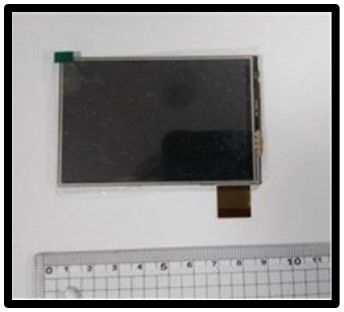



**Consist of :**

- **a LCD panel;**
- ***[a touch-sensitive panel] (only #1);***
- **a LED backlight unit;**
- **a flexible PCB :**
  - ***interface between the principal apparatus and the display module;***
  - ***convert voltage to a level useable by the module;***
  - ***control the function of the display panel [and touch-sensitive panel].***

# Flat panel display modules

**# 1**

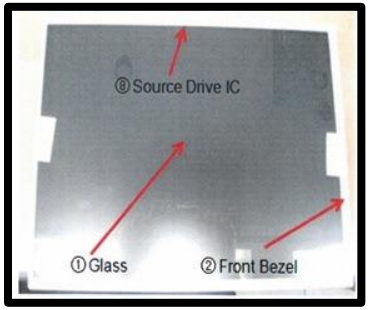


**Various portable apparatus**, such as personal digital assistants (PDAs), mobile phones, global positioning system (GPS) receivers, etc.

**# 2**

**Portable automatic data processing machine** (tablet computer)

**# 3**




**Various industrial display applications**

# Flat panel display modules


**What kind of signal the modules in questions can receive or accept ?**

*For instance, can they accept a standard signal dealing with digital signals inside digital machines, such as so called "LVDS signals", or can they accept also any other type of signal?*

**They are generally designed to reproduce only one or two types of digital signal → they do not operate with different digital signal.**

***#1 :*** *uses the SPI (Serial Peripheral Interface) Bus;*
*accepts and processes a touch signal*

***#2 and #3 :*** *accept LVDS signals*

# Flat panel display modules


**What is the content of the signal accepted by the modules ?**

*Is it only a video signal or does it have other components?*

**They usually accept not only the video signals, but also the relevant parameters (e.g., clock, brightness, operating voltage, etc.) via the built-in driver ICs.**

*These parameters may be delivered through a separate path of signals or merged into video signal path.*
*(Those incorporating a touch panel can also accept a touch signal – see **#1 above**)*

# Flat panel display modules


**Which components or functions are missing for the modules not to be considered unfinished monitors of heading 85.28 ?**

**Components :**

AD converter; power converter

*[other devices representing the characteristics of the final products]*

**Funtions :**

can reproduce only signals of their own “native” resolution via pre-determined digital

Interface

*[not able to receive video signals of various resolution via standardised interface]*

# Flat panel display modules


**Are the modules able to display a video signal with the native resolution of the screen ?**

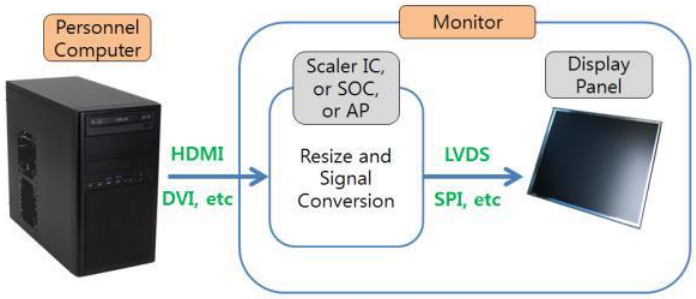
**If the native resolution of the screen is higher than that of the display module, the original video (input) signal is cut off matching the resolution of the display module.**

*In order to solve this problem, the final apparatus (e.g., monitors) is equipped with components which can resize resolution of the input signal.*

# Flat panel display modules

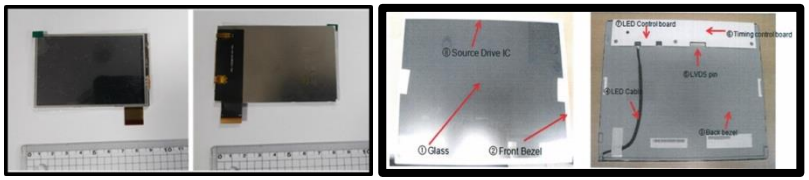

**Aside from their housing, what are the differences between the modules in question and "monitors" or "display screens" that could be found in any laptop computer ?**

**Every monitor and display screen has a function of adjusting the input signal into its "native" resolution. But the display modules at issue do not have such functions and relevant components as presented.**



# Flat panel display modules

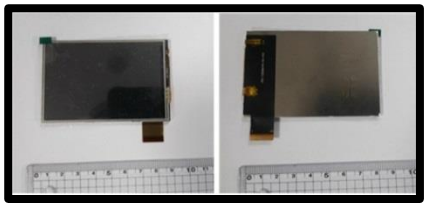

**What makes Product #2 specific for a tablet computer in comparison with Products #1 and #3 ?**




**The tablet computer producer defined the specification of display module #2 (e.g., outer dimensions, clock, brightness, operating voltage, level of durability, standards of interface, etc.) and the manufacturer of the display module designed the operating software and FPCB shape and features.**

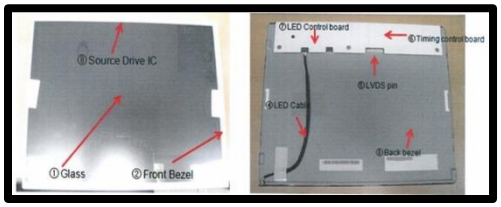
# Flat panel display modules

??? HOW TO CLASSIFY ???



# 1

# 2



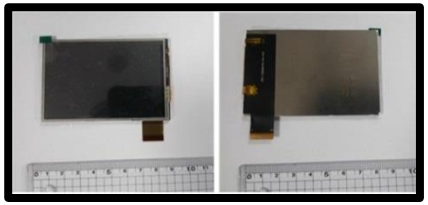

# 3

## *UNFINISHED MONITORS*

## *of heading 85.28*

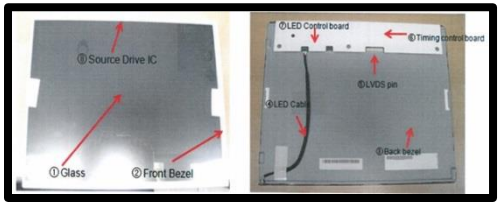
# Flat panel display modules

??? HOW TO CLASSIFY ???



# 1

# 2




# 3

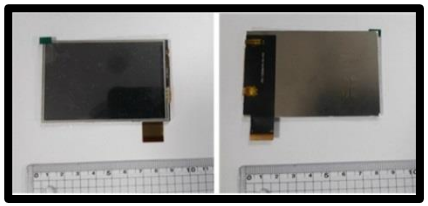
UNFINISHED MONITORS

**NO**

of heading 85.28

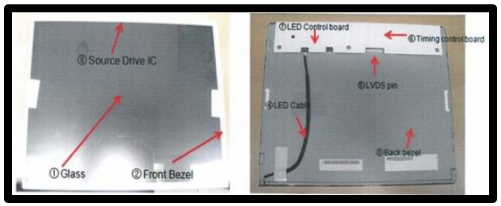
# Flat panel display modules

??? HOW TO CLASSIFY ???



# 1

# 2



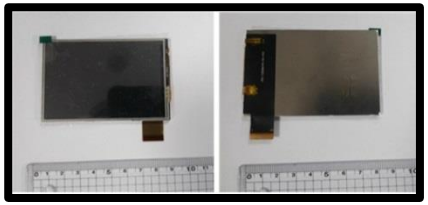

# 3

## *LIQUID CRYSTAL DEVICES*

## *of heading 90.13*

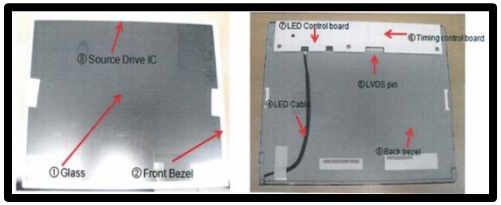
# Flat panel display modules

??? HOW TO CLASSIFY ???



# 1

# 2




# 3

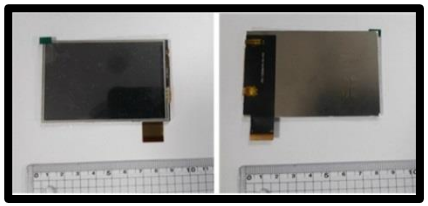
LIQUID CRYSTAL DEVICES

**NO**

of heading 90.13

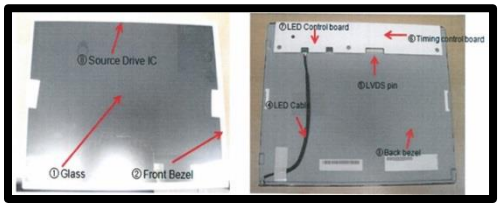
# Flat panel display modules

??? HOW TO CLASSIFY ???



# 1

# 2




# 3

## *PARTS*

***classified by appropriate provisions of the Nomenclature***

# Flat panel display modules

??? HOW TO CLASSIFY ???

**# 2**

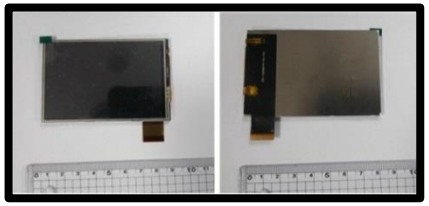
***can only be used for a specific type of a tablet computer***

## 8473.30

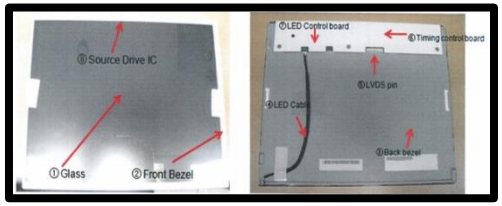
## GIRs 1 (Note 2 (b) to Section XVI) and 6

# Flat panel display modules

**??? HOW TO CLASSIFY ???**



**# 1**




**# 3**

***Various portable apparatus:***

- ***personal digital assistants (PDAs),***
- ***mobile phones,***
- ***global positioning system (GPS) receivers,***
- ***etc.***

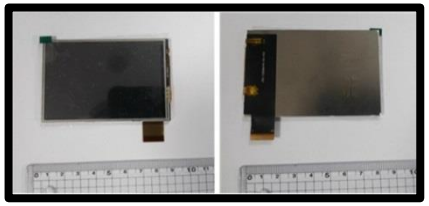
***Various industrial display applications***

## ?? Note 2 to Section XVI or GIR 3 ??

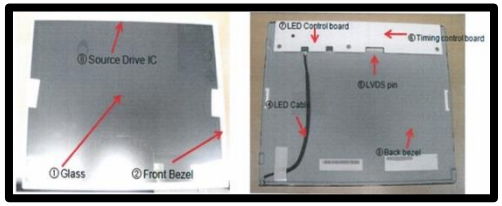
***(possible headings: 84.73, 85.17, 85.26, 85.29, 85.48, 90.33, 95.04, etc.)***

# Flat panel display modules

??? HOW TO CLASSIFY ???



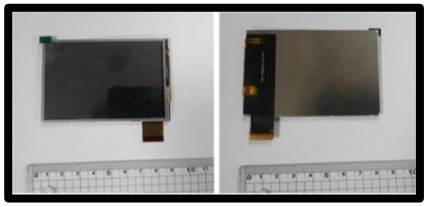
# 1




# 3

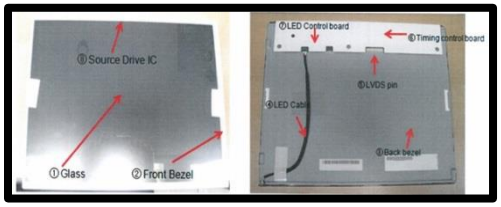
- difficulties in finding accurate information from the manufacturers for these products
- drop them from consideration at this time
- could be examined at some future session if more information is presented

# Flat panel display modules



# 1

# 2

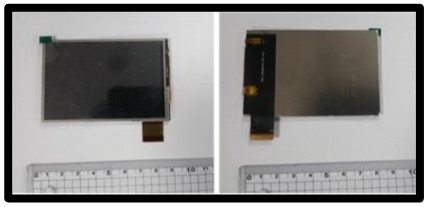



# 3

***A new heading for those products could facilitate their classification***

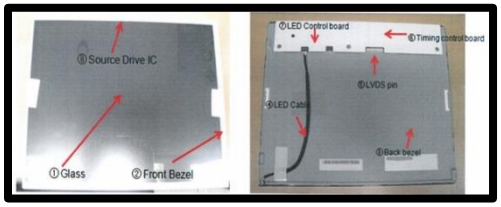
***85.24 Flat panel display modules, whether or not incorporating touch-sensitive screens***

# Flat panel display modules



# 1

# 2

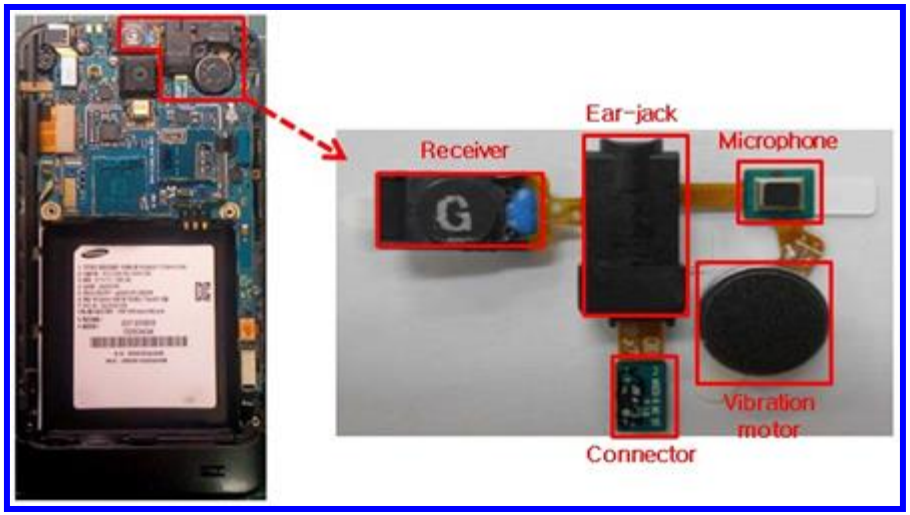



# 3

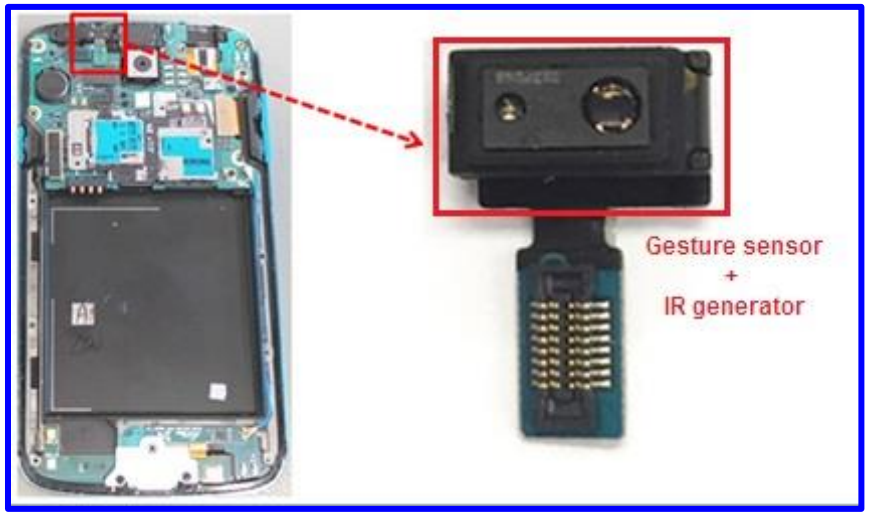
# Questions ?

# Assemblies designed to be mounted into a mobile phone

## ASSY #1

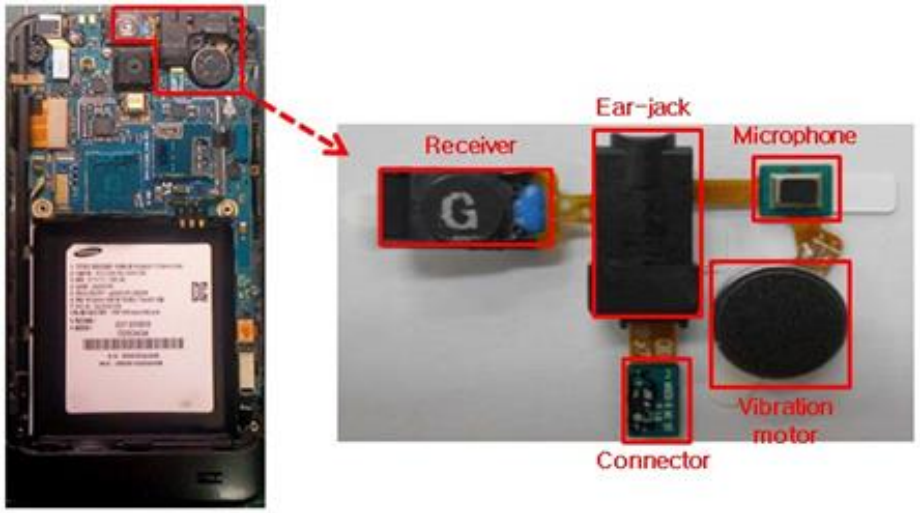



## ASSY #2



# Assemblies designed to be mounted into a mobile phone

## ASSY #1




**Incorporates:**

(i) **linear vibration motor** comprised of coils and magnets, for generating mechanical vibration while being turned on electricity; it is used in etiquette mode;

(ii) **speaker (or receiver)** (effective frequency band: 300 Hz ~ 3.4 kHz), reproducing sound from the voice of the other party during a telephone conversation by converting an input electrical signal into an audio signal (other sound and signal, such as, bell sound, music, etc. are reproduced through another speaker);

(iii) **microphone** for converting surrounding sound, for example, when taking videos, into an electrical signal to be used by the phone (another microphone, mounted at the bottom of the telephone, is used for telephone communication);

(iv) **earphone connector** for plugging in an external earphones;

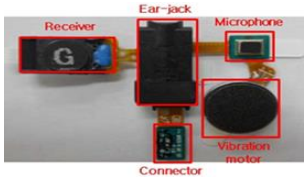
(v) **connector** for interconnecting the assembly with the main board of the phone;

(iv) **flexible printed circuit board** (FPCB) to support and electrically connect the components of the assembly.

***The vibration motor, speaker, microphone and earphone connector perform their functions independently.***

# Assemblies designed to be mounted into a mobile phone

## ASSY #1



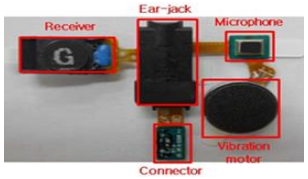


**What is a precise description of the component "speaker (or receiver)" and how does it work ?**

**The receiver changes the other end's voice into sound signal and outputs the sound, so that users can hear the voice during conversation. When electrical signal is transmitted to a coil, a magnetic field is formed surrounding the coil. The magnetic field reacts with permanent magnet, and thus a diaphragm rotates. Therefore, eccentric weight imbalance causes vibration, converting into the sound signals. In other words, as current is supplied, a voice coil vibrates up and down between magnet* and yoke** by electromagnetic force. The diaphragm concurrently vibrates and generates sound. Separate from the receiver, sound signals other than ring tone or music, are output through a separate speaker.**

# Assemblies designed to be mounted into a mobile phone

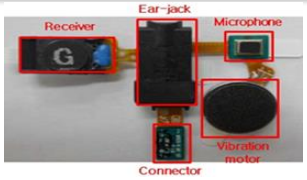
**ASSY #1**





| | |
|---|---|
| Can the article be regarded as an assembly designed to be mounted into a specific cellular telephone ? | YES |
| Can the article play an integral part in the operation or function of the specific cellular telephone ? | The "speaker (or receiver)" enables users to hear voice from the other end, i.e., performs essential function in mobile phones.<br>***The other components may not be regraded to perform essential function of mobile phones.*** |

# Assemblies designed to be mounted into a mobile phone




**ASSY #1** ***THE HSC CONSIDERATION***

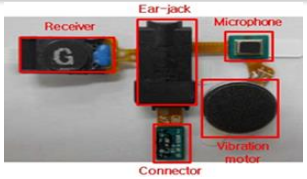
***Possible headings:***

**84.79 – Machines having individual functions *(vibration motor)***

**85.17 – Parts of telephones for cellular networks**

**85.18 – Microphones**

# Assemblies designed to be mounted into a mobile phone




**ASSY #1** ***THE HSC CONSIDERATION***

***Possible headings:***

**84.79**

- ***Note 3 to Section XVI***
- ***Note 2 to Section XVI***

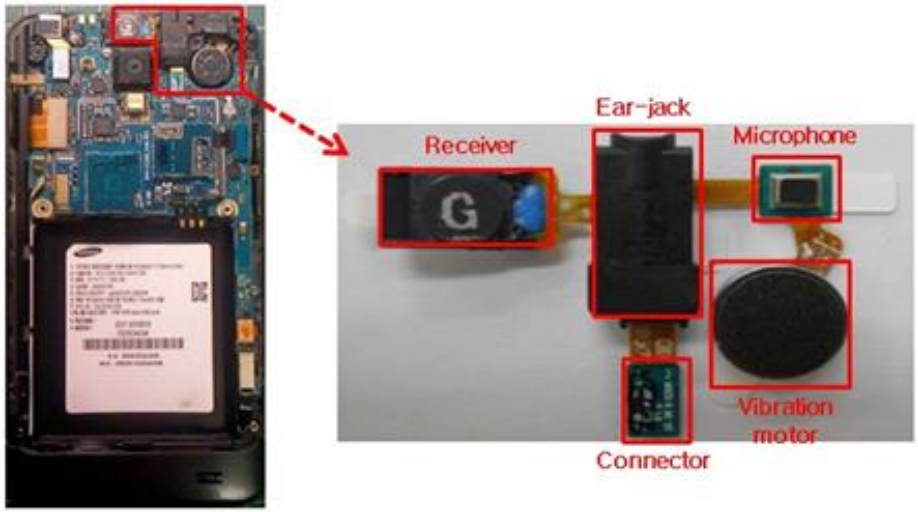
**85.17**

- ***an integral and essential function to the mobile telephone to which it would be mounted***

**85.18**

# Assemblies designed to be mounted into a mobile phone

**ASSY #1**

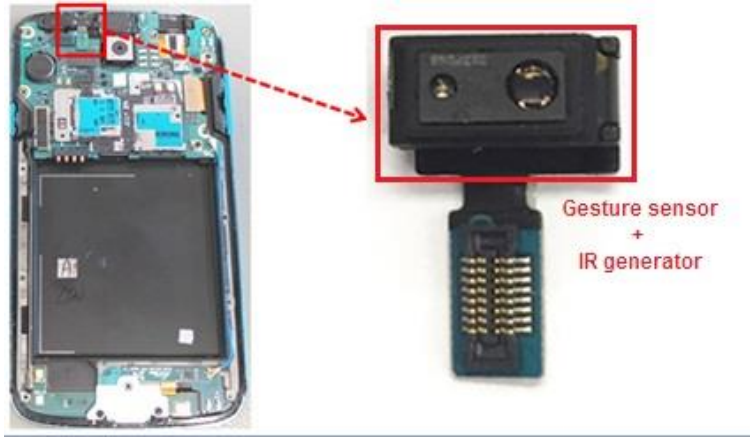


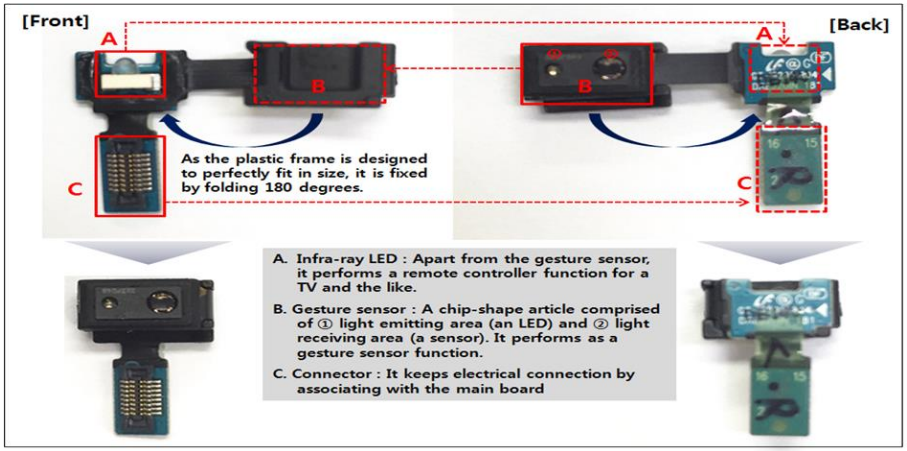

## 8517.70

## GIRs 1 (Note 2 (b) to Section XVI) and 6

# Assemblies designed to be mounted into a mobile phone

## ASSY #2




**Incorporates:**

(i) **gesture sensor** for capturing movement of hands without touching the phone screen, which is a chip-shaped article comprised of a light-emitting diode (light emitting area) and a sensor (light receiving area). The LED emits infrared (IR) rays, and the sensor receives IR rays reflecting from a hand and recognizes a user's gesture;

(ii) **IR LED** for generating IR signal to remote control functions of external apparatus, such as a television, set-top box, etc.;

(iii) **connector** for interconnecting the assembly with the main board of the phone;

(iv) **flexible printed circuit board** (FPCB) to support and electrically connect the components of the assembly.

***The gesture sensor and IR LED perform their functions independently.***

# Assemblies designed to be mounted into a mobile phone

## ASSY #2



**Which components are in the sensor ?**

**The sensor consists of one IR LED and four directional IR photo diodes, which are in the form of a respective chip.**

*When the LED emits IR rays, the sensor recognizes a user's gesture by receiving the IR rays reflected from the user's hand.*

# Assemblies designed to be mounted into a mobile phone

**ASSY #2**



| | |
|---|---|
| **Is the product combined with a digital processing circuit ?** | **NO** |
| **Is there any touch screen in the final product (mobile phone) the assembly at issue is to be mounted into ?** | **The final product, equipped with the assembly, has a touch screen.** |

# Assemblies designed to be mounted into a mobile phone

## ASSY #2



**What is the function of the assembly in the mobile phone ?**

**The gesture sensor senses the movement of the users' hand by using IR rays.**

**The sensor recognizes the "message" from certain hand's movement, transmitting electric signals to the CPU. This function enables users to capture the display screen, check information or receive a phone call without touching the phone. Simply put, this sensor makes it possible to operate the phone as the users want in a non-contact manner.**

**The IR LED uses IR rays to transmit and receive data or signals over relatively short distance.**

**Through smartphone apps, it functions as a remote controller to control an IR sensor-embedded TV, a set-top box, etc.**

# Assemblies designed to be mounted into a mobile phone

## ASSY #2



**Are there any other uses, such as for alarms, televisions, detectors, or controlling other machines ?**

**Through smartphone apps, it can remotely control other machines, such as, IR sensor-embedded TV, set-top box, etc., that use the IR sensor to receive signals from the assembly.**

**Is there any switch, relay or conductor on the PCB ?**

**There are no switches, relays and conductors.**

# Assemblies designed to be mounted into a mobile phone

## ASSY #2



| | |
|---|---|
| Is there any control circuit ? | NO |
| Is the gesture sensor different from a conventional gesture sensor ? | There is no big difference in the function between those two products. |
| Does the gesture sensor have components other than IR LED and photodiodes ? | No, it has no components other than IR LED and photodiodes. |

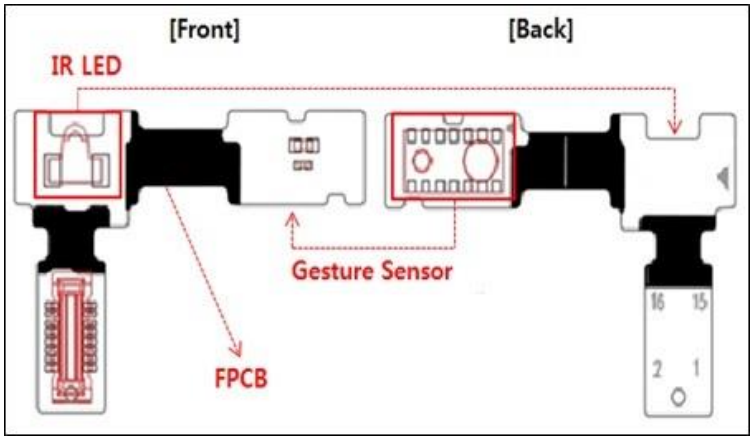
# Assemblies designed to be mounted into a mobile phone

## ASSY #2



**Does the product consist of separate circuits of gesture sensor and of IR LED or it consists of one integrated circuit with these two components together ?**

**Each component is mounted on a single FPCB as shown in the following drawing.**



# Assemblies designed to be mounted into a mobile phone

## ASSY #2



| | |
|---|---|
| Can the article be regarded as an assembly designed to be mounted into a specific cellular telephone ? | YES |
| Can the article play an integral part in the operation or function of the specific cellular telephone ? | The article has nothing to do with the essential function of mobile phones (i.e., phone talks). |

# Assemblies designed to be mounted into a mobile phone


**ASSY #2** ***THE HSC CONSIDERATION***

***Possible headings:***

**85.17 – Parts of telephones for cellular networks**

**85.43 – Electrical machines having individual functions**

**90.31 – Other measuring or checking instruments, apparatus and machines**

# Assemblies designed to be mounted into a mobile phone


**ASSY #2** ***THE HSC CONSIDERATION***

***Possible headings:***

**85.17**

- ***Note 3 to Section XVI/Note 3 to Ch. 90***
- ***Note 2 to Section XVI/Note 2 to Ch. 90***

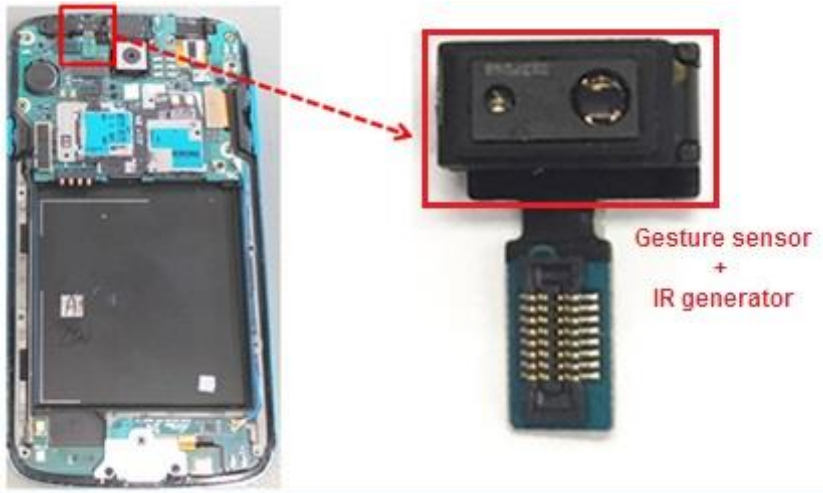
**85.43**

- ***an integral and inseparable part in the operation of the mobile telephone to which it would be mounted***

**90.31**

# Assemblies designed to be mounted into a mobile phone

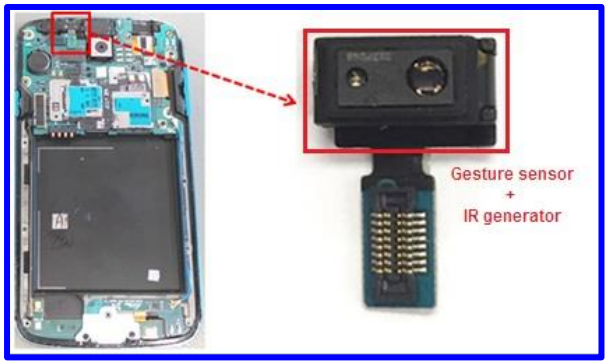
**ASSY #2**




## 8517.70

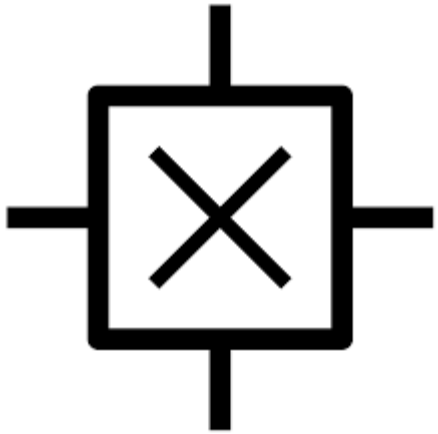
## GIRs 1 (Note 2 (b) to Section XVI) and 6

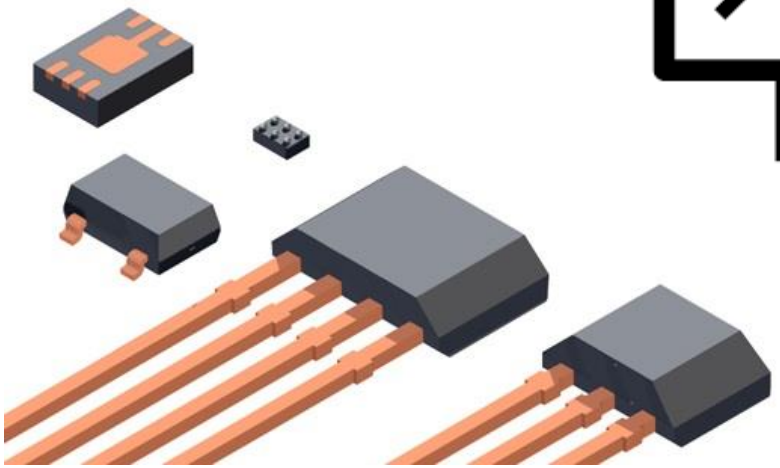
# Flat panel display modules

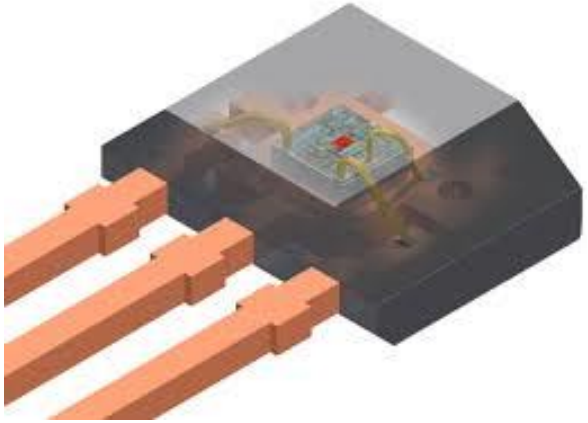




# Questions ?

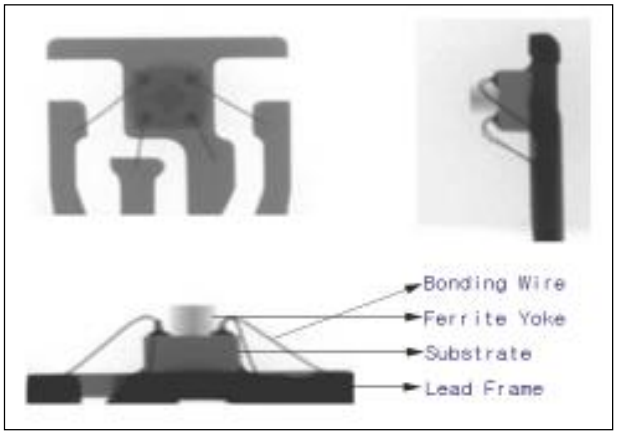
# Hall effect sensor







# Hall effect sensor

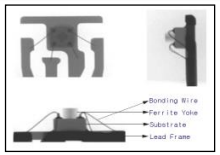




**"Hall element device" with four terminals,** consisting of a ferrite substrate with a layer of indium antimonide (InSb) and a ferrite yoke in the role of a magnetic circuit, mounted on a lead frame and wire bonded for connecting to an outer electronic circuit.

*The device senses magnetism by "Hall effect" and is used for small accurate motors of washing machines, refrigerators, air conditioners, etc.*

# Hall effect sensor

## *IN GENERAL*

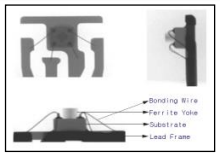



- Its output voltage ("hall voltage") varies in response to a magnetic field
- It is used for proximity switching, positioning, speed detection, and current sensing applications

# Hall effect sensor

## Specific information

## Manufacturing technology




InSb, a compound semiconductor of a hall element, is prepared by **thin film technology** which is a vacuum deposition method and the preparation process thereof is as follows.

(a) **Wafer fabrication process** (performed by photo lithography, deposition, and etching, etc .) :

*(i) InSb compound semiconductor formed as a thin film on a wafer (vapour deposition method)*

*(ii) Cu metal wire is formed on the wafer (plating method)*

*(iii) the bonding electrode of Au is formed on the wafer (plating method)*

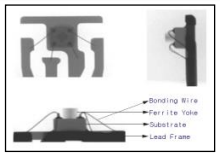
*(iv) metal wire Cu or InSb thin film is selectively etched on photo resist - a pattern is exposed and the circuit of a hall element is realized (photo lithography process)*

*(v) Ferrite Yoke Bonding is performed on the wafer*

# Hall effect sensor

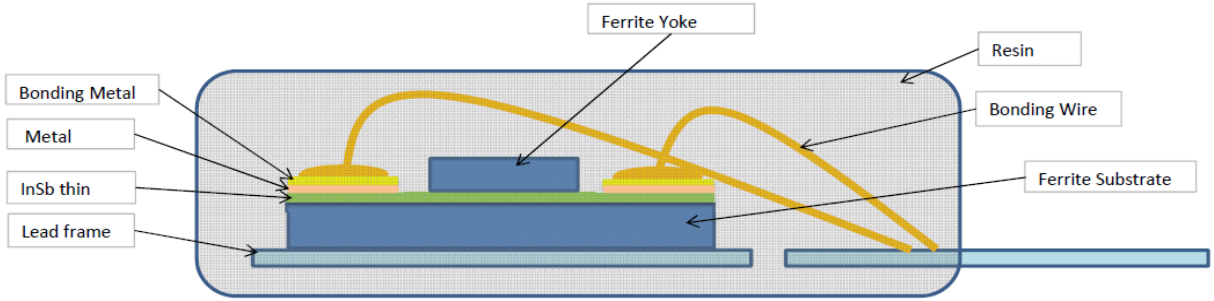
## Specific information

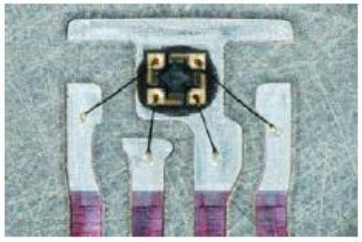
### Manufacturing technology




InSb, a compound semiconductor of a hall element, is prepared by **thin film technology** which is a vacuum deposition method and the preparation process thereof is as follows.

(a) **Packaging process** (process of molding an individual element of a semiconductor and performed in the sequence of dicing, die bond, wire bond, and molding to prepare an individual element) :

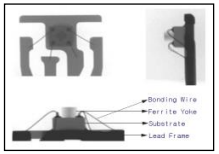


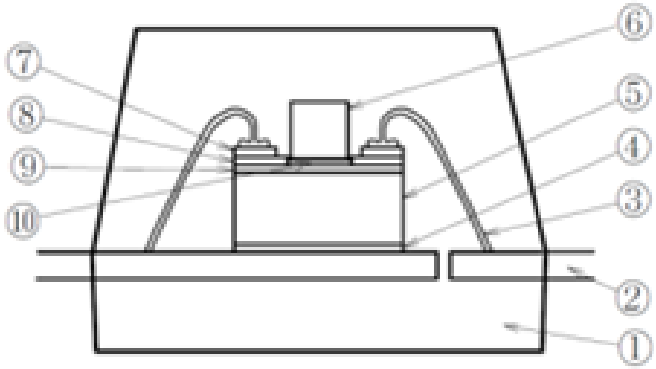
# Hall effect sensor

## Specific information

### Product's structure




⑦ Wire bonding pad
⑧ Cu electrode for ohmic contact to InSb
⑨ InSB layer
⑩ Silicone resin for Ferrite chip adhesion



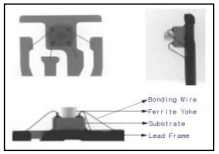

① Mold resin
② Lead frame
③ Au wire
④ Die bonding resin (Ag)
⑤ Ferrite substrate
⑥ Magnetic flux concentrator: Ferrite chip for magnetic flux focusing

- *Product's elements are inseparable associated to each other*
- *Magnetic yoke and ferrite substrate element are formed on the top and the bottom with InSb thin film at its centre*

# Hall effect sensor

## *Specific information*

### *Examples of applications*




## Air Conditioner

- *FAN motor*
- *Current switch*

## Washing machine

- *Motor*
- *Control or pressure switch*

## Refrigerator

- *Ice maker*
- *Cooling FAN motor*

## Smartphone, Digital Camera

- *Auto focus*
- *Zoom*
- *OIS*
- *Analog pointing device*

## Car application

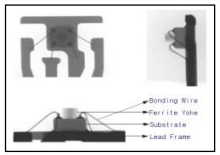
- *FAN motor*
- *Inverter control*

## @ Factory

- *Fan motor*
- *Inverter control*
- *Power monitoring*
- *Industrial robot*

# Hall effect sensor

## THE HSC CONSIDERATION




***Possible headings:***

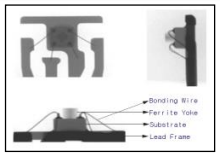
**85.41**

***Semiconductor devices***

***Can the device be regarded as a similar semiconductor device (Note 8(a) to Chapter 85) ?***

# Hall effect sensor

## THE HSC CONSIDERATION




***Possible headings:***

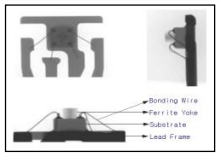
**85.43**

***Electrical machines having individual functions***

***Does the device have an individual function ?***

# Hall effect sensor

## THE HSC CONSIDERATION




***Possible headings:***

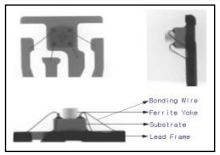
**85.48**

***Electrical parts, n.s.o.i.e.***

***If heading 85.41 or 85.43 is not applicable ?***

# Hall effect sensor

## *THE HSC CONSIDERATION*




***Possible headings:***

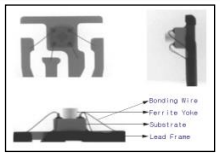
**85.41 – Semiconductor devices**

**85.43 – Electrical machines having individual functions**

**85.48 – Electrical parts, n.s.o.i.e.**

# Hall effect sensor

## *THE HSC CONSIDERATION*



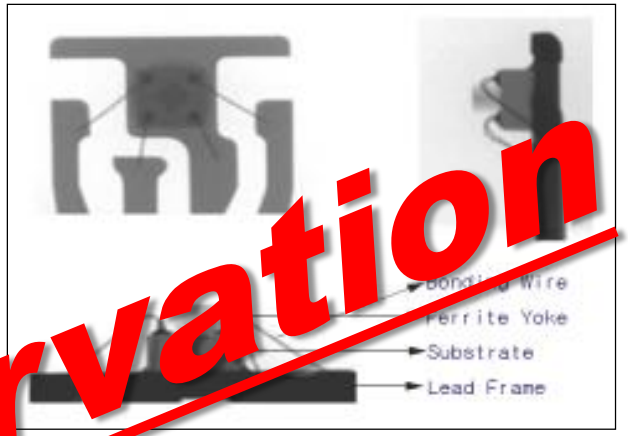

***Possible headings:***

**85.41 – Semiconductor devices**

**85.43 – Electrical machines having individual functions**

**85.48 – Electrical parts, n.s.o.i.e.**

# Hall effect sensor

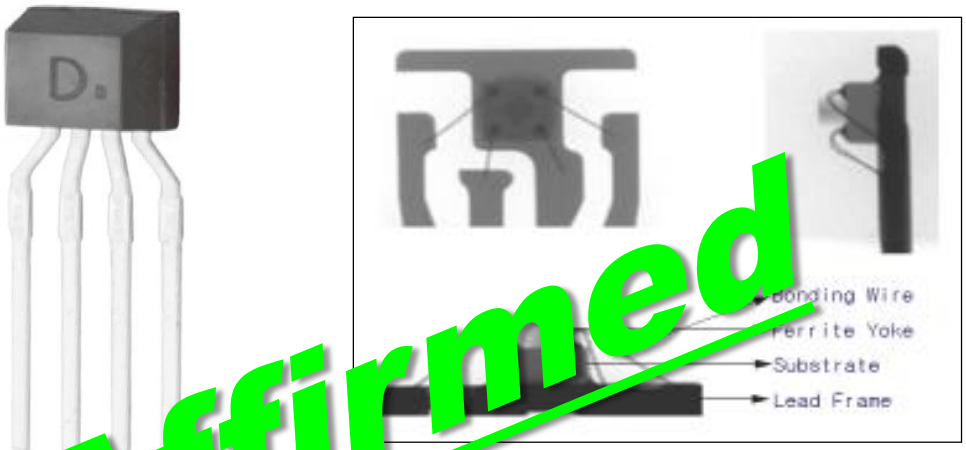




Reservation

**8543.70**

**GIRs 1 and 6**

# Hall effect sensor

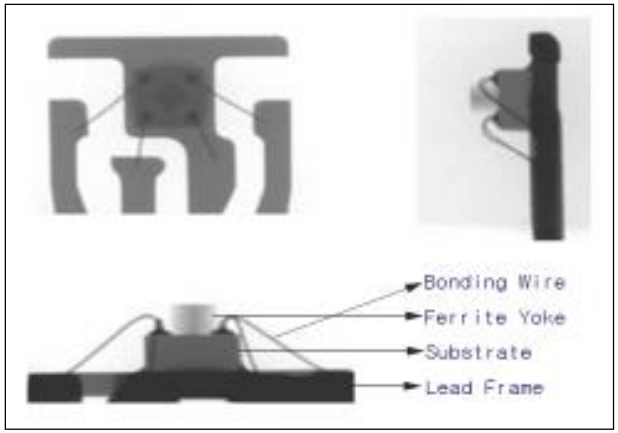



Affirmed

**8543.70**

**GIRs 1 and 6**

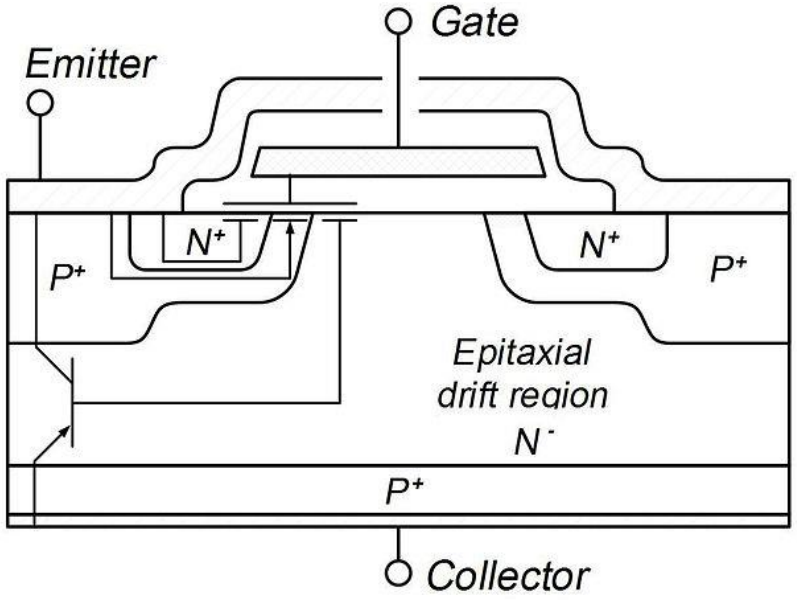
# Hall effect sensor


# Questions ?

# IGBTs

## Packaged Insulated-Gate Bipolar Transistor (IGBT)

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# IGBTs

## Description of the product at issue :

A composite good in which three kinds of semiconductor device (element) with different functions including IGBT (Insulated gate bipolar transistor), FWD (Free Wheeling Diode) and NTC Thermistor are attached on one board and sealed with a plastic case.

It is a package article consisting of 6 switches in parallel connection with IGBT and FWD, and 1 NTC Thermistor. It is a switching module to convert DC power to AC power, which is located inside the inverter of a hybrid vehicle, electric vehicle, fuel cell vehicles, etc.

# IGBTs

**Headings at issue :**

**85.04** Electrical transformers, static converters (for example, rectifiers) and inductors

**85.36** Electrical apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits (for example, switches, relays, fuses, surge suppressors, plugs, sockets, lamp-holders and other connectors, junction boxes), for a voltage not exceeding 1,000 volts; connectors for optical fibres, optical fibre bundles or cables.

**85.41** Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED); mounted piezo-electric crystals

# IGBTs

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# IGBTs

**85.04** Electrical transformers, static converters (for example, rectifiers) and inductors

# 8504.90

## by application GIRs 1 (Note 2 (b) to Section XVI) and 6

# IGBTs

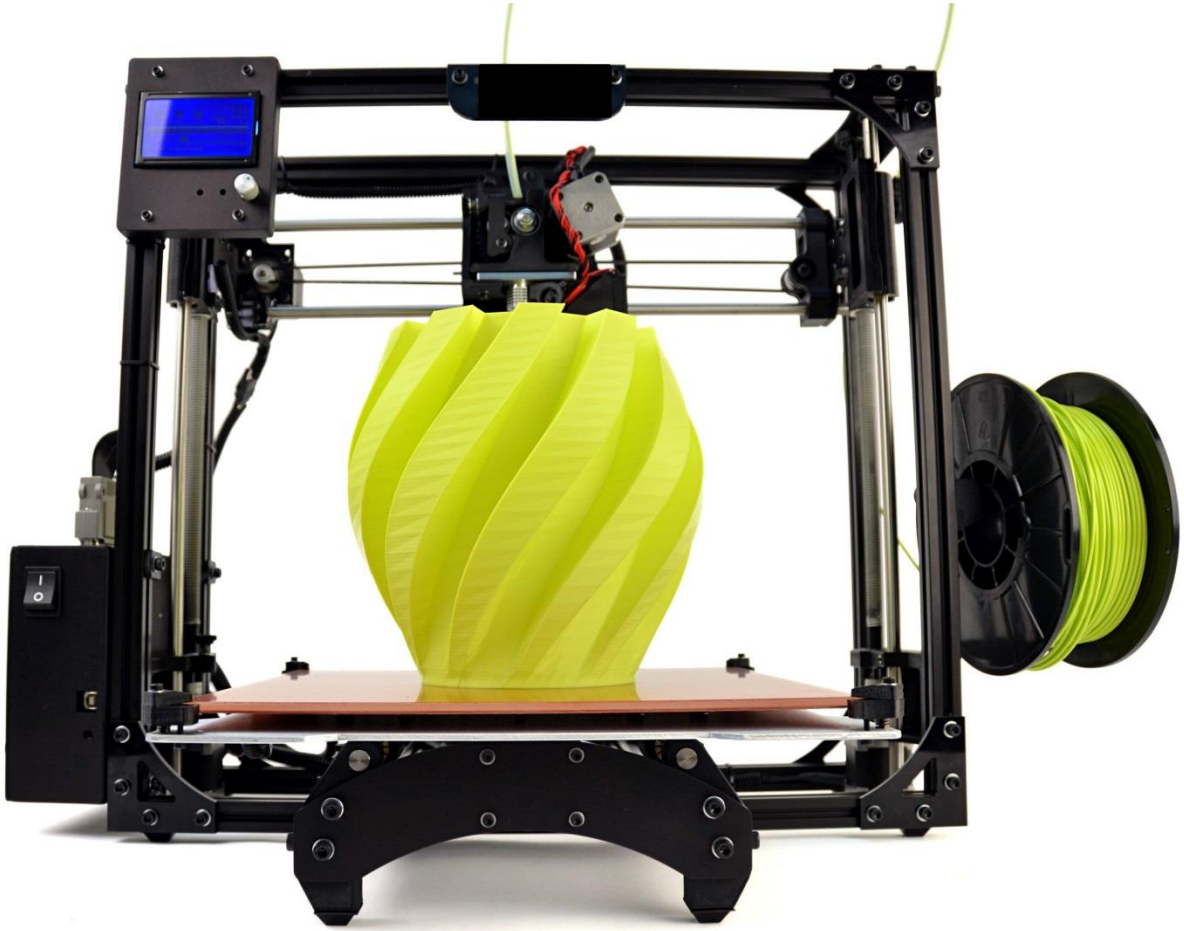
85.04 Electrical transformers, static converters (for example, rectifiers) and inductors

**8504.90**

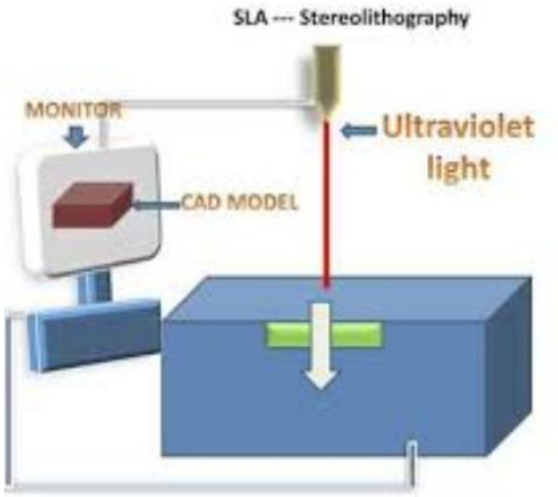
**by application GIRs 1 (Note 2 (b) to Section XVI) and 6**

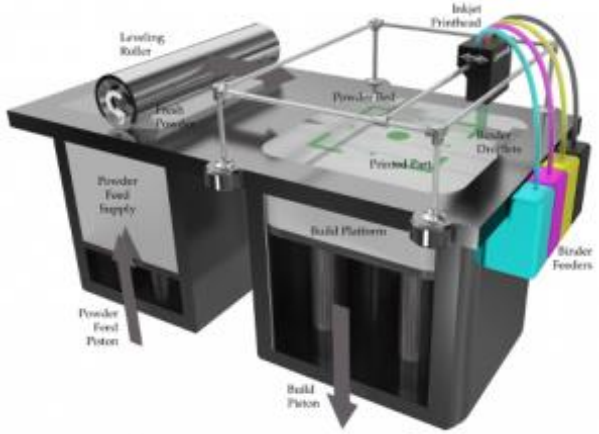
Reservation

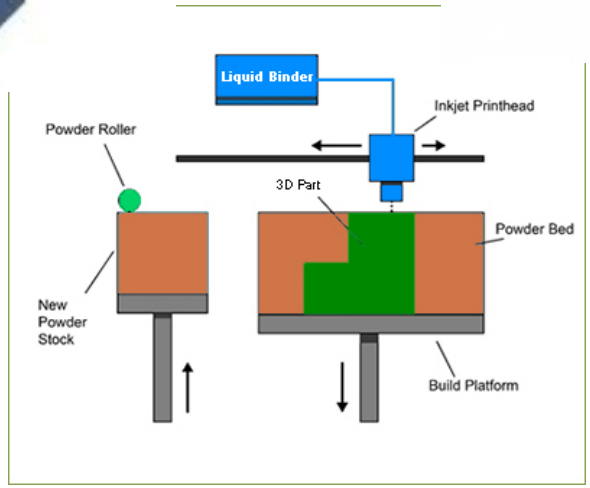
# 3D Printers



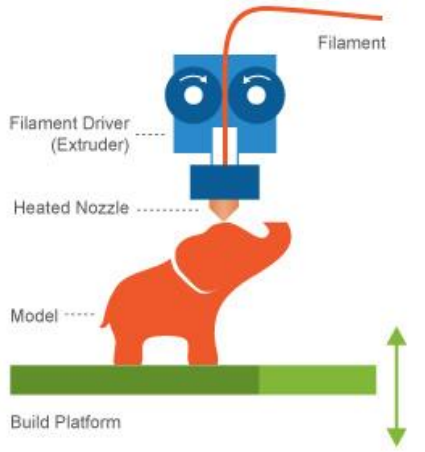
# 3D Printers



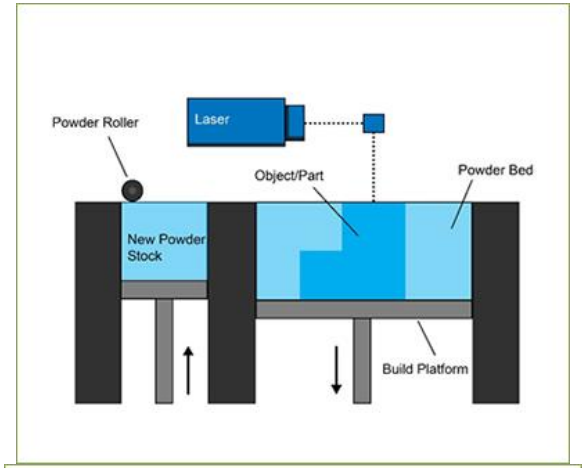



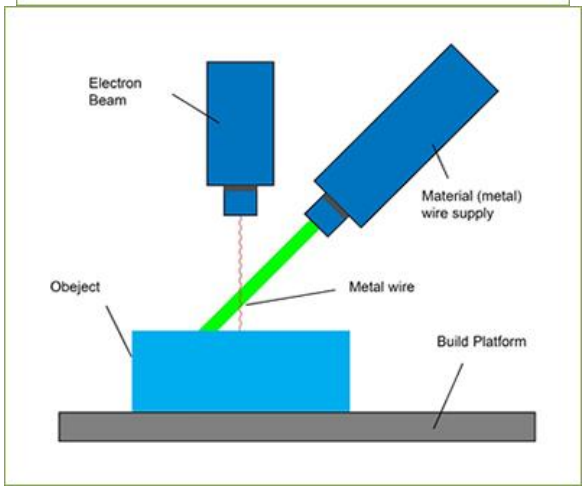



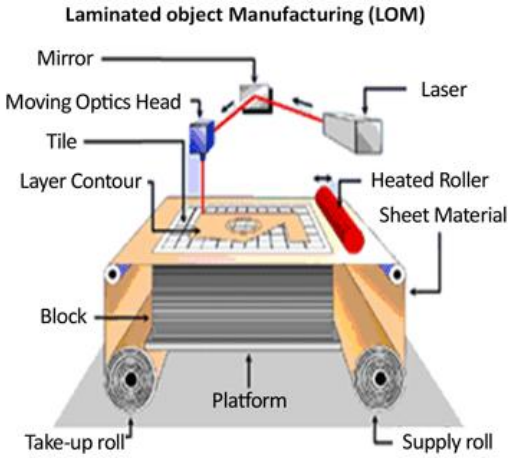
# 3D Printers



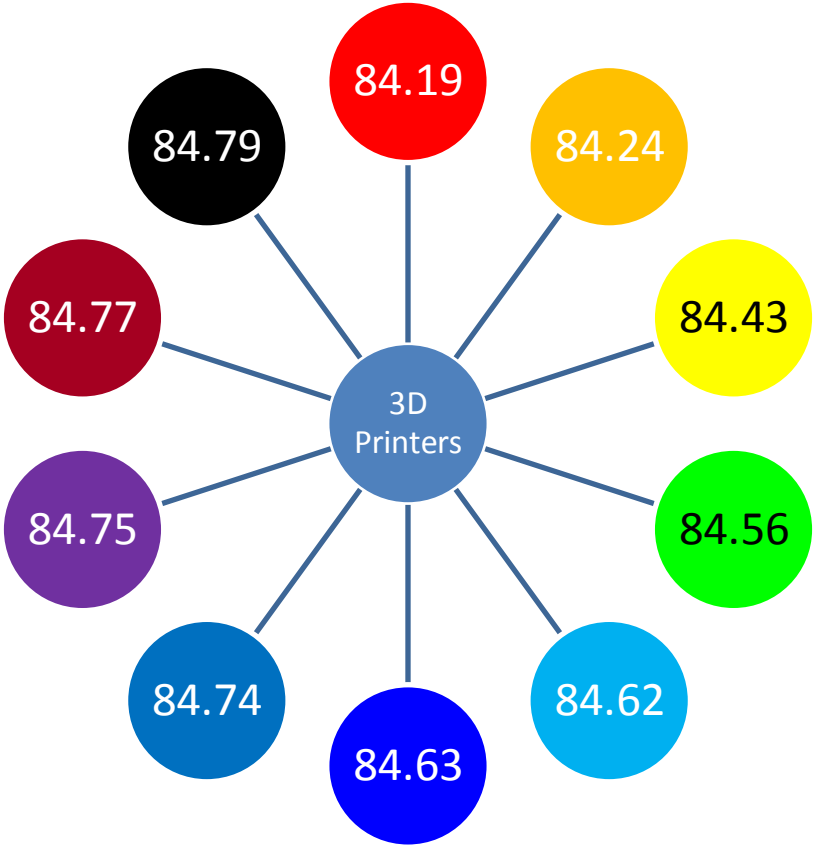

Fused Deposition Modeling (FDM)



# 3D Printers



## 3D Printers

# What's next?

## 3D Printers

# Questions?

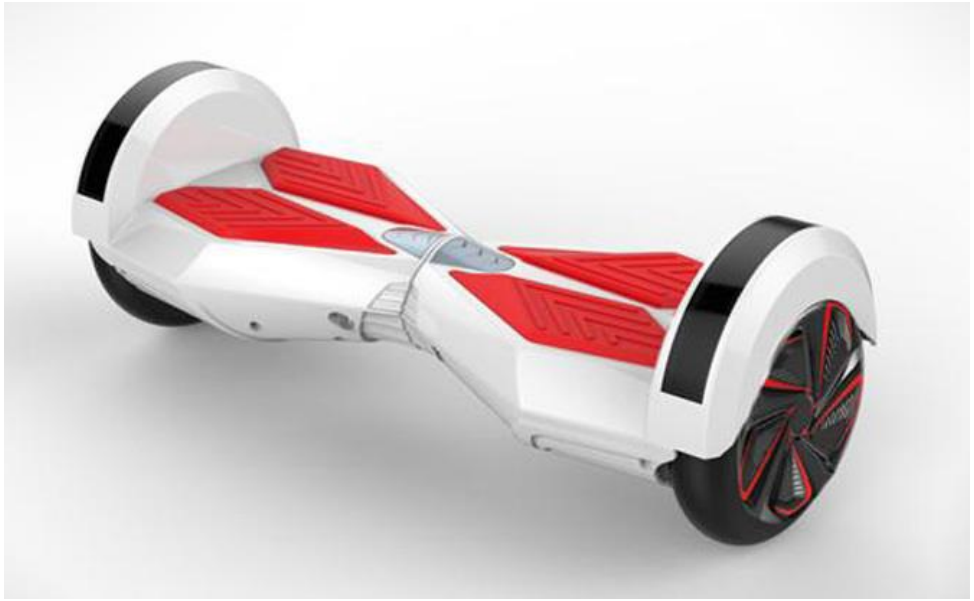
# 2017 WCO Knowledge Academy for Customs and Trade

## "Hoverboards"

Back to the Future™ is a registered trademark and copyright of Universal City Studios, Inc. and U-Drive Joint Venture

# "Hoverboards"

# "Hoverboards"



# "Hoverboards"

**Description of the products to be classified by the Committee :**

**Self-balancing, electrically-powered, two-wheeled transportation device (commercially known as the "hoverboard", "smart scooter" or "drift vehicle"), designed for carrying a single person, for use within low speed areas such as pavements (sidewalks), paths, and bicycle lanes. The maximal speed of the device is 10 km/h and maximum distance per charge is 15-20 km.**

**Through the built-in gyroscope and acceleration sensors, the device uses the dynamic balance principle to control moving forward, backward, turning and stopping. It relies on the changes of the centre of the body gravity to measure the changes of the vehicle body posture, and uses the servo control system to drive the motor precisely to do the corresponding adjustment. When the human body stands on the device and bends forward, the system can sense it automatically and drive wheels to move forward to keep balance. When the gravity centre bends backward, the wheels will move backward, and in case of turning, it can slow down and control left, right foot to bend to front or back to make the gravity centre deflect to left for turning left, and to right for turning right, according to the self-turning requirements.**

# "Hoverboards"

***Potential headings at issue?***

**87.11** Motorcycles (including mopeds) and cycles fitted with an auxiliary motor, with or without side-cars; side-cars

**95.03** Tricycles, scooters, pedal cars and similar wheeled toys; dolls' carriages; dolls; other toys; reduced-size ("scale") models and similar recreational models, working or not; puzzles of all kinds

# "Hoverboards"

## Objective characteristics

- Cost
- Quality of the materials
- Dimensions
- Output of electric motor (speed)
- Lack of safety equipment (turn signals, brake lights)

# "Hoverboards"

## Subjective characteristics

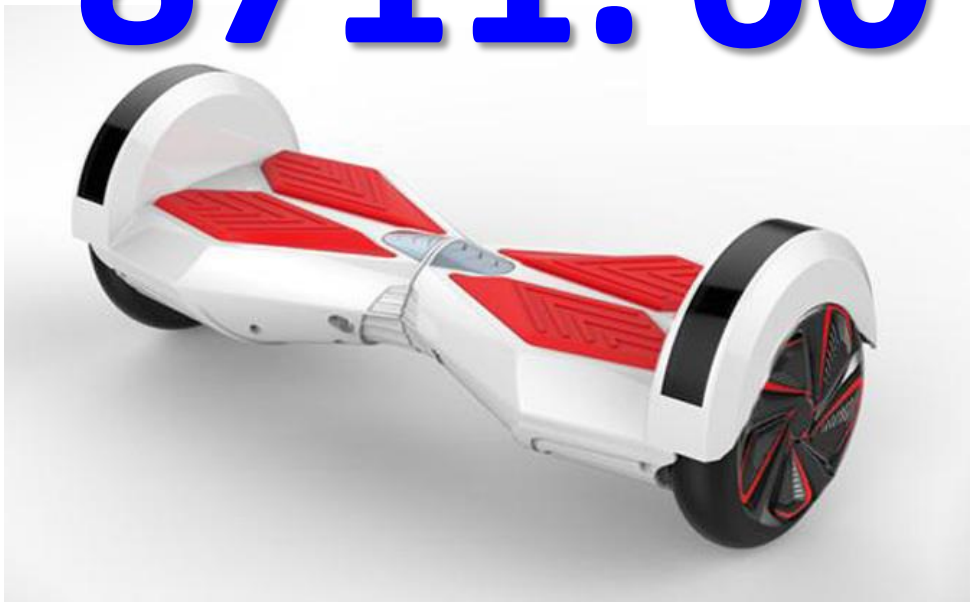
## Advertising

## Marketing

## Channels of sale

# "Hoverboards"

# 8711.60



# 2017 WCO Knowledge Academy for Customs and Trade

## "Hoverboards"

**HS 2012**

**8711.90**

1. **A two-wheeled, electrically-powered transportation device,** designed for carrying a single person, for use within low speed areas such as pavements (sidewalks), paths, and bicycle lanes. Its technology allows the rider to stand upright while a system composed of gyroscope sensors and multiple onboard microprocessors maintains both the device's and rider's balance on two independent, non-tandem wheels.

   It has a sensor system comprising five solid-state silicon gyroscopes, a control system comprising 10 onboard microprocessors, and an electric drive system comprising two brushless servo motors that have a maximum output of 2 hp. It is powered by two rechargeable batteries.

   **Application of GIRs 1 and 6.**

*Adoption : 2007*

# 2017 WCO Knowledge Academy for Customs and Trade

## "Hoverboards"

**HS 2017**

**8711.60**

1. **A two-wheeled, electrically-powered transportation device,** designed for carrying a single person, for use within low speed areas such as pavements (sidewalks), paths, and bicycle lanes. Its technology allows the rider to stand upright while a system composed of gyroscope sensors and multiple onboard microprocessors maintains both the device's and rider's balance on two independent, non-tandem wheels.

   It has a sensor system comprising five solid-state silicon gyroscopes, a control system comprising 10 onboard microprocessors, and an electric drive system comprising two brushless servo motors that have a maximum output of 2 hp. It is powered by two rechargeable batteries.

   **Application of GIRs 1 and 6.**

*Adoption : 2007 + 2016*

## "Hoverboards"

# Questions?

# Smoking devices used with new “tobacco” products

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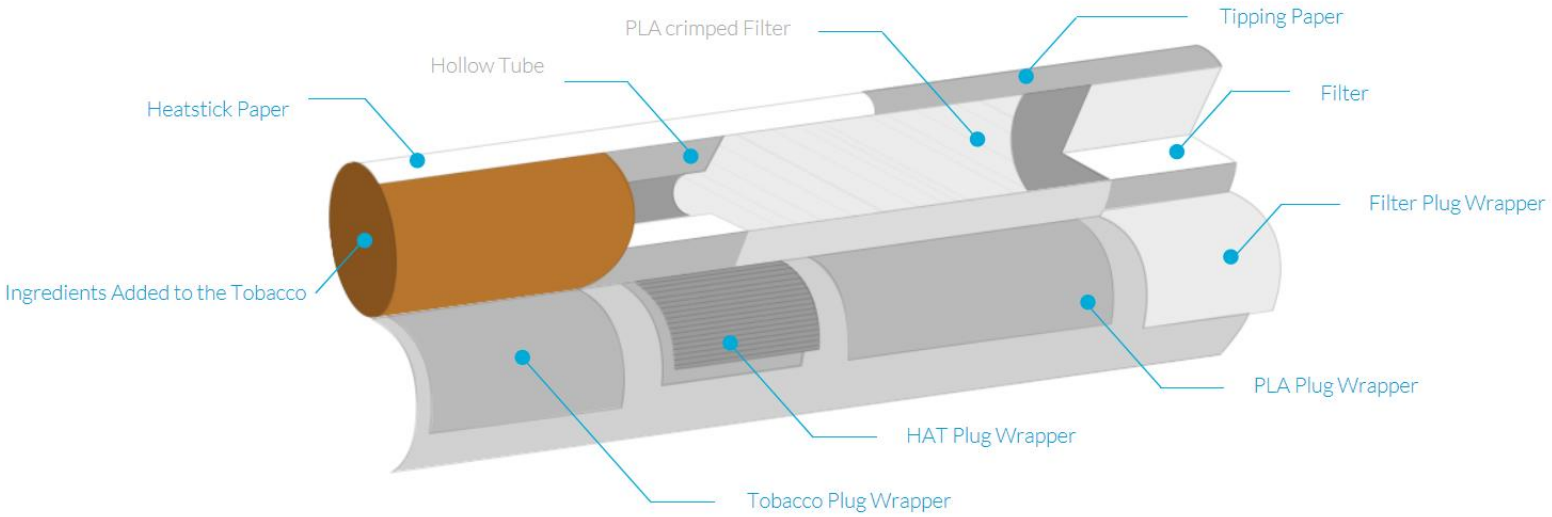

# Smoking devices used with new “tobacco” products

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# THANK YOU FOR YOUR ATTENTION

# ANY QUESTION ?