

# Are you able to protect your business against counterfeit ICs ?



- Suitable for All Devices/Packages
- Good/Suspect/Fail Results
- No Training Required
- Configurable Library
- Full Analysis Report

## SENTRY Counterfeit IC Detector

The ABI SENTRY is a unique solution for the quick and easy detection of counterfeit ICs and components.

Through a complex *PinPrint* test algorithm, SENTRY is able to identify parts that have a different internal structure, or no structure at all, and even components originating from a different manufacturer.

SENTRY is your very own electronic sentry, guarding the entrance to your production facility from the infiltration of counterfeit devices.



[www.abielectronics.co.uk](http://www.abielectronics.co.uk)



# What are counterfeit components ?

**Counterfeit** [koun-ter-fit] Adj. : made in imitation so as to be passed off fraudulently or deceptively as genuine.

The manufacture of counterfeit (or fake) components is an illegal process that emerged due to the transferable value of electronics parts. Any company in the world requiring components to manufacture Printed Circuit Boards (PCBs) is at risk and many have already received batches of "bad" devices.

Counterfeiting is achieved through various processes. Devices known as "pulls" are removed from scrap boards (which have been discarded) in a process that is highly unsafe. Following superficial repairs, these devices are branded with (ir)relevant information - including a manufacturer's logo - and passed on to an unwary buyer as genuine. Another technique is to actually produce components using the normal manufacturing capabilities in "ghost shifts" which take place outside of standard hours. However, the chips created that way include many manufacturing faults and some may not even contain a silicon die.

Unfortunately, it is not possible to differentiate counterfeit components until they are placed on a PCB and the production team runs the first tests on the complete assembly. This leads to the costly process of identifying the component(s) at fault and then removing them from all boards in production. In some cases, complete batches of finished products need to be recalled to the factory.

In the last five years, reports of counterfeit components have increased exponentially. In 2008, export of fake ICs accounted for more than 8% of global merchandise trade which is equivalent to lost sales of \$6 Billion.

## SENTRY - simple but powerful instrument

**SENTRY Counterfeit IC Detector** is a product designed to help electronics companies protect their production facilities from the infiltration of counterfeit components. It is an easy to use instrument with a dual purpose :

- Check components as they are received by the stores department and ensure that they are valid. Staff from goods inwards department can use the system with no knowledge of electronics.
- Review potentially fake components and analyse the test data with suppliers. Advanced users can use the full report to determine the origin of failure.

SENTRY is designed to accommodate all types of components, from simple two-pin devices to more complex packages such as :

- Dual In-Line (DIL)
- Small Outline Integrated Component (SOIC)
- Small Outline Package (SSOP, TSOP)
- Plastic Leadless Chip Carrier (PLCC)
- Quad Flat Pack (TQFP, PQFP, LQFP)
- Ball Grid Array (BGA)

Note: SENTRY does not limit itself to testing electronics components, it could also be used for entire modules.

### SENTRY Test Channels

As standard, the SENTRY unit offers up to 128 test channels which can be configured for various device packages.

For more advanced applications, SENTRY can be extended to 256 test channels using the upgrade modules available from ABI Electronics.

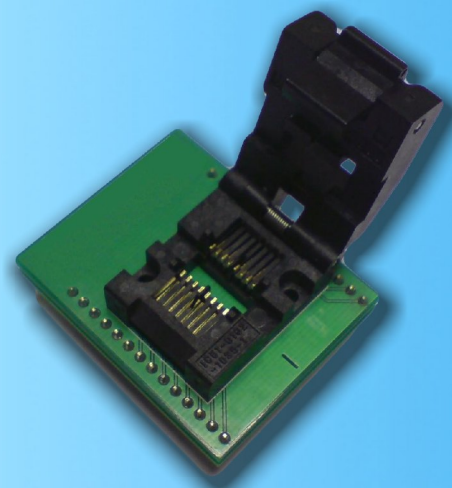
### Scan Profiles and PinPrint Acquisition

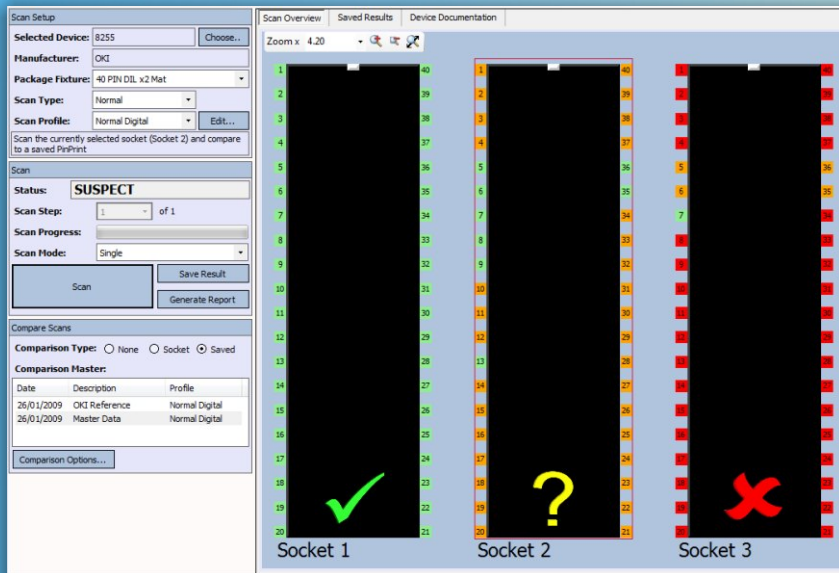
SENTRY works by scanning the device under test to measure the electrical characteristics of its pins (or a subset of pins). These characteristics are called *PinPrints* and are used to compare a known genuine component with a suspect one.

In order to acquire *PinPrints*, SENTRY applies electrical signals to the pins of the device. The hardware settings which control these electrical signals are known as scan profiles and can be modified by users. The parameters that can be set include the voltage range, the low and high peak voltage, the waveform, the source resistance and the frequency.

As well as changing the parameters of the scan profile, SENTRY can also scan components in two modes:

- **Normal mode:** the electrical signals are applied to the device under test with a fixed reference.
- **Matrix mode:** the reference of the electrical signals rotates around the device under test for a more detailed inspection.





## Comparison Results

For ease of use, the results of the saved or socket comparison are displayed automatically on the device under test, as can be seen on the screen shot above. Three conditions can be encountered:

- Good device (✓)
- Suspect device (?)
- Bad device (✗)

For refined and accurate comparison, the point, pin and overall tolerances can be adjusted manually.

## Comparison Type

The detection of potentially counterfeit components is achieved by comparing the *PinPrints* of a known genuine device with the *PinPrints* of the device under test. SENTRY offers two mode of comparison :

- **Saved Comparison:** the *PinPrints* being acquired are automatically compared with previously saved ones.
- **Socket Comparison:** the *PinPrints* of two separate devices are compared live.

With SENTRY, users can manage a wide range of information for each device. *PinPrints* of components can be saved within the software and recalled for a new comparison scan at any time.

For a more thorough traceability of devices, extra information can be added in the component folder and includes photos, PDF documents or even text and spreadsheet editors.

The above set of data, including designed packages and fixtures, can be exported for backup or sharing between multiple stations.

## Library Development / Package Editor

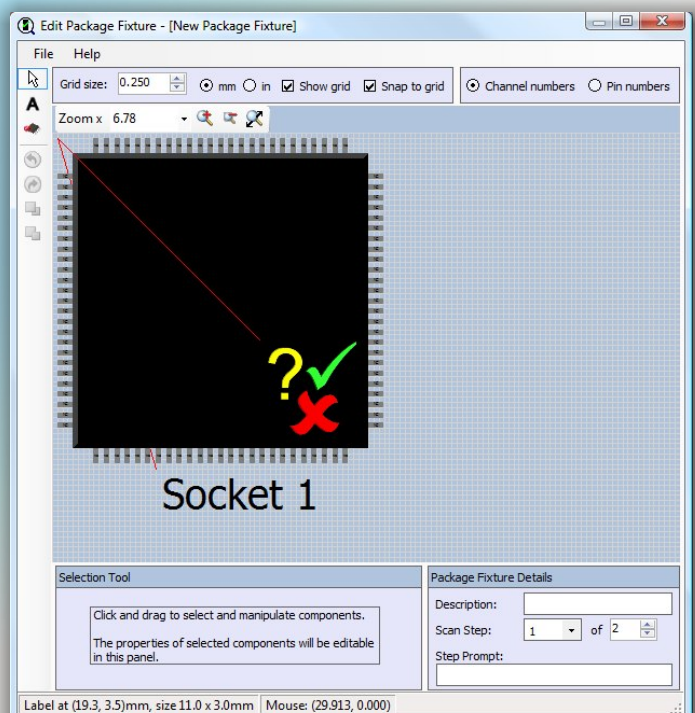
The ABI SENTRY software gives users the power to modify or generate new packages in order to respond to the wide variety of components available on the market. It will also enable SENTRY to remain fully useable for bespoke or custom designs as well as future releases by semiconductor manufacturers.

The Package Editor is a graphical interface which allows users to quickly design packages to illustrate the device under test. Pin mapping to SENTRY's test channels is achieved smoothly through the package fixture editor (picture, right).

To make SENTRY more interactive and to remove any potential operator errors, pop up messages can be introduced to guide the user through the process of testing a device. Text instructions can also be implemented.

## Scan Steps

SENTRY can also divide scans into different steps by halting the scanning process and informing the user of the required operation to be carried out. This is particularly useful to test components in different orientations or to gradually scan a very high pin count device.





# SENTRY Counterfeit IC Detector - Chip Report


Pin summary	
	<b>Failed Pins</b> Pin 2 45% match Pin 3 25% match Pin 6 65% match Pin 13 10% match Pin 18 33% match
	<b>Suspect Pins</b> Pin 4 85% match Pin 8 79% match Pin 14 80% match Pin 15 89% match
	<b>Comparison Thresholds</b> Fail = 75%, Pass = 90%


### Sentry Counterfeit IC Detector - Chip Report

Page 1 / 2

**Test Summary**

**Device:** Cypress Instruments 5962-9055502LA  
**Package:** DIL20  
**Overall Result:** **FAILURE**  
**Operator:** John Williams  
**Report Date:** 28 September 2008

Comparison Reference Information	
<b>Capture Date:</b>	10 August 2008
<b>Operator:</b>	Harry Rice
<b>Reference Picture</b>	

Test Device Information	
<b>Capture Date:</b>	28 September 2008
<b>Operator:</b>	John Williams
<b>Test device picture</b>	
<b>Comments</b>	Picture shows non-standard device marking – potentially suspect.

**Comments**  
Device received as sample from manufacturer.

## Technical Specifications

### Electrical Requirements

Operating voltage: 85 - 264 VAC  
Operating frequency: 47 - 63 Hz  
Power consumption: 150 VA Max  
CE approved & RoHS compliant

### Environmental Requirements

Operating temperature: 10°C to 30°C  
Humidity: 20 to 80%

### Computer Requirements

Microsoft Windows XP™ or Vista™  
Pentium 4 or above  
Minimum RAM: 512 MB  
Hard disk space: 200MB  
USB 2.0 high speed port  
Mouse, keyboard & monitor

### Physical Specifications

Dimensions: 27 x 25 x 9 cm  
Weight: 3.5 Kg

### Specifications

128 test channels (standard)  
Expandable to 256 test channels in steps of 64  
20V pk-pk max test voltage  
Sine, ramp and triangle waveform available

### Included Accessories

User Manual  
USB cable  
Software CD (including drivers and manual)

Your Local Distributor:



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