

# SmartWave Box

## *User Manual*

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# 1 INTRODUCTION

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The SmartWave Box, a hardware device, is the perfect solution for testing contactless cards. It can read and simulate contactless smart cards; and also can analyze or spy the communication between a contactless card and terminal.

With its various modes of operation, the SmartWave Box is the most versatile tool available today for contactless testing.

## 1.1 Scope of document

This the user manual describes how to setup and use the SmartWave Box.

## 1.2 Intended audience

This document is intended for the user of the SmartWave Box. Audiences are assumed to have a fair understanding of the standards related to smart cards and CL cards and related tests.

## 1.3 Terminology

To avoid confusion the term ‘internal terminal’ is used to refer to the internal active antenna of the terminal side of the SmartWave Box, the internal terminal communicates with the Card-under-test (CUT). The external passive antenna is referred as the ‘(CL) probe’ and communicates with the Terminal-under-test (TUT).

## 2 PRODUCT DESCRIPTION

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### 2.1 Shipping group

SmartWave Box	One (1) unit
SmartWave Probe	One (1) unit
Firewire cable	One (1) unit
USB cable	One (1) unit
AC/DC power adapter	One (1) unit
Suckers	Two (2) units

## 3 SYSTEM REQUIREMENT

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### 3.1 Hardware requirements

- A free USB port in your PC, support up to USB v2.0.
- No special requirement for memory size, please check the software application user manual for corresponding information.

### 3.2 Software requirements

- Collis test tools may need to be installed in order to use the full functionality of the SmartWave Box.

Please contact Collis for software applications information.

## 4 INSTALLATION

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Please use the installation procedure below to setup the SmartWave Box:

- **STEP1**  
Carefully unpack the contents of the shipping group.
- **STEP2**  
Use Fireware cable to connect the SmartWave box with the SmartWave probe.
- **STEP3**  
Connect the SmartWave Box to PC with provided USB cable.
- **STEP4**  
Connect power adapter to the SmartWave Box.  
Now the box is powered up. The power LED on the box will be turned on. And a beep sound will be generated by the box after initialization.
- **STEP5**  
Install the driver for the SmartWave box by following the driver installation wizard on your system.

**Note:** The SmartWave Box driver will be installed automatically when installing related Collis Test Tools.

Then the SmartWave box is ready to use, you may need to install other software from Collis to work together with the SmartWave box. Please check the application user manual for further information.

## 5 FUNCTIONAL DESCRIPTION

### 5.1 Housing

The SmartWave Box has about the same size as the SmartLink Box. The antenna of the internal terminal is placed underneath the top cover and its position is clearly marked. On the back of the SmartWave Box a power connector, a USB connector and the CL probe connector are placed. On the front of the box are LEDs which shows CL card, terminal status and communication. The front also carries test connectors to view information on an oscilloscope.



Fig. 1 The SmartWave Box

### 5.2 LEDs

The SmartWave Box has the following LEDs:

Power	Red LED
Intern Tx/Rx	Tri-color LED, green = Data Rx, red = Data Tx
Probe Tx/Rx	Tri-color LED, green = Data Rx, red = Data Tx
Internal terminal RF	Tri-color LED, green = RF only, amber = RF and modulation
CL probe RF	Tri-color LED, green = RF only, amber = RF and modulation

The communication signaling of the tri-color LEDs is stretched, i.e. short frames are shown as being longer.

### 5.3 Connectors

The SmartWave Box is fitted with the following coaxial connectors for connection with an oscilloscope:

Internal terminal RF	Buffered antenna RF signal of the internal terminal
Internal raw data (Rx)	Raw Rx data
Internal Tx data	Transmit data
External terminal RF	Buffered antenna RF signal of the internal terminal
External raw data (Rx)	Raw Rx data