

MP300 SC1 + MP300 SCL1

Spy a complete NFC transaction using the combination MP300 SC1 + MP300 SCL1

- ◆ Simple synchronisation link
- ◆ Contact and contactless exchanges displayed on the same time base
- ◆ Convenient data display thanks to the MPManager software suite
- ◆ All specific functionalities of the testers remain present



OVERVIEW :

The main features of the combination MP300 SC1 + MP300 SCL1 are :

- Spy of ISO/IEC 7816-3, SWP, ISO/IEC 14443, FeliCa, ISO/IEC 15693 exchanges on one single session
- Convenient display of the captured data using the MPManager software
- Simple to setup
- Possibility to measure translation time of a contactless frame into SWP by a NFC component
- All features of both MP300 testers remain available
- Enables to capture a complete NFC transaction
- Also compatible with dual interface smartcards

The combination of MP300 SC1 + MP300 SCL1 will typically be used in the following contexts :

- Characterisation of a NFC host component
- Debug of a CLF (contactless front end)
- Analysis of a combi card

SPECIFICATIONS :

MP300 SC1 : Supported protocols

Protocol analysis mode	
ISO/IEC 7816-3	
T=0 and T=1 protocols	100% implemented
Block level spy	Available
SWP (ETSI TS 102 613 and TS 102 622)	
Baudrate supported	From 49kbps to 1.9Mbps
Block level spy	Available
LLC level spy (S_HDLC, ACT, CLT)	Available
HCI	Available
Synchronous chips (memory chips)	

Implemented	
Example of supported chips	Eurochip T2G SLE 4442 SLE 4407 AT24CXX
USB 2.0	
Supported speeds	Low speed, full speed
Smartcard emulation mode	
ISO/IEC 7816-3	
T=0 and T= 1 protocol	100% implemented by firmware
Custom protocol emulation	Available
SWP (ETSI TS 102 613 and TS 102 622)	
Baudrate supported	From 49kbps to 1.9 Mbps
Block level spy	Available
LLC level spy (S_HDLC, ACT, CLT)	Available

MP300 SC1 : Programmable parameters

Protocol analysis mode	
ISO/IEC 7816-3	
I/O direction detection threshold	
SWP (ETSI TS 102 613 and TS 102 622)	
SWP S2 channel current threshold	
Smartcard emulation mode	
ISO/IEC 7816-3	
Guard time	Defined in ETUs
Smartcard response time	Defined in ETUs
SWP (ETSI TS 102 613 and TS 102 622)	
Current values on SWP S2 signal (high and log stated)	From 1nA to 2mA
Smartcard response time	

MP300 SC1 : Spy feature

Accuracy	20ns
Signals displayed	Signals C1, C2, C3, C4, C6, C7, C8 SWP S1, SWP S2 Trigger in Trigger out
Protocols supported	ISO/IEC 7816-3, SWP, USB 2.0 (simultaneous spy possible without accuracy damage)
Type of events displayed	Logical state change Characters Modification of baudrate Clock frequency detection Analog representation of the signals I/O direction

MP300 SC1 : Available tests

Electrical measurement (available for all versions)

Possibility to execute simultaneous voltage and current measurement to characterise both the terminal and the smartcard	
Number of samples	512000 (unlimited for Vcc)
Contacts available	C1, C6, C7
Perturbations (smartcard emulation mode)	
ISO/IEC 7816	
Sending out of standard blocks (wrong CRC, wrong data length, ...)	
Sending characters with parity error	
Simulating reception of parity errors	
Modifying the guardtime on the fly	
SWP (ETSI TS 102 613 and TS 102 622)	
Sending out of standard blocks	
Removal of bit stuffing	
Card response time	
Master resume time measurement	

MP300 SCL1 : Protocols supported

ISO/IEC 14443	
Type A	Available
Type B	Available
Supported baudrates	106, 212, 424, 848 kbps
Anticollision	Managed by firmware
T=CL protocol	Managed by firmware
Mifare TM	
Supported versions	Classic Light Ultra light Ultra light C
ISO/IEC 15693	
FeliCa TM	
Supported baudrates	212 and 424 kbps
Out of standard protocols	
Gives the possibility to exchange frames without any protocolary encapsulation	

MP300 SCL1 : Programmable parameters

Logical parameters	
FDT, TR0, TR1, SOF, EOF, EGT	Adjustable in clock cycles
Physical parameters	
Load modulation of the emulated smartcard	Adjustable (phase and amplitude can be defined)
Generation of EMD (Electro Magnetic Disturbance)	Available

MP300 SCL1 : Spy feature

Resolution	20ns
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Events displayed	Carrier and subcarrier detection Type A sequences Phase changes Bytes Frames User events Trigger in Trigger out I/O direction Baudrate changes (asymmetrical baudrates are supported)
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MP300 SCL1 : Card emulation programming modes

Scenario mode	Timings are respected to the clock cycle, deterministic approach
Event driven mode	The user defines the reaction of the emulated smartcard on reception of events, with possibility to define the reaction depending on the event and the value of the received frames

MP300 SCL1 : Communication parameters

USB 2.0
TCP/IP 10/100 Mbps
RS 232

MP300 SCL1 : Software development

Remote development (the code is executed from the PC)	
Elements available	Communication Dll supplied
Supported programming languages	C, C++, VB, Java, .NET Any language that supports Dll
Embedded development (the code is executed directly by the MP300)	
Recommended cross compiler	Windriver compiler (preferred version : 4.4b)

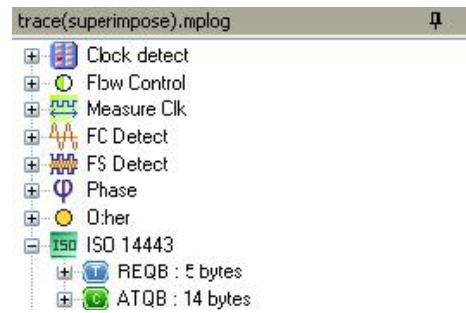
MP300 SCL1 : User Interface

MPManager

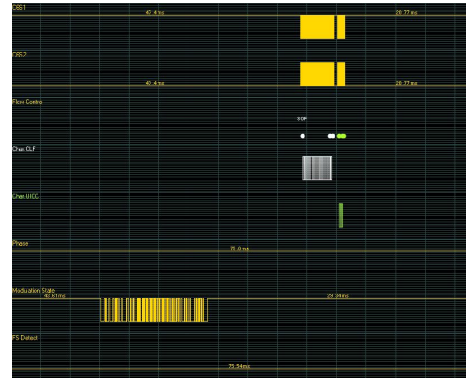
SOFTWARES :

The software that is used for the display of the trapped exchanges is MPManager.

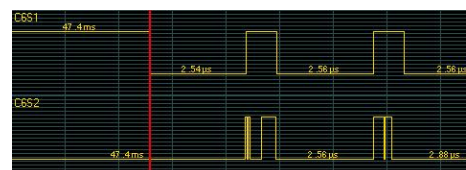
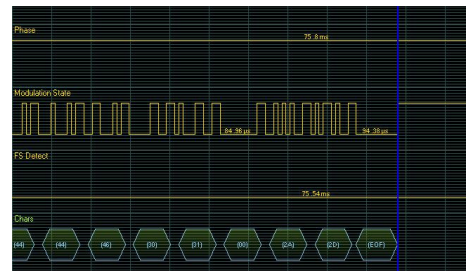
Once the spy session is over, the “Viexer” window of MPManager shows all signals that have been spied (contact and contactless exchanges)



The viewer window of MPManager also gives a graphical display of the trapped exchanges. For example on the following screenshot, we have a contactless command (starting a payment application). This command will be in fact executed by the U-SIM. The contactless frame thus needs to be translated into SWP



The time between the contact, and the SWP blocks, is the time it takes to the NFC component to do the translation job. By positioning two cursors, we will know how long it takes to the NFC component to perform this job.



MPManager gives us the time difference between both cursors

ACCESSORIES :

Micropross supplies a complete range of accessories for their laboratory tools, that include :

A SIM to ISO converter

Numerous shapes of probes, to use this tester with different types of contact smartcard readers and handsets

A probe to enable spying sessions between a smartcard and an external reader

A probe for oscilloscope connection

We also supply packages to extend the warranty of the tester. Please ask us for the maintenance contracts available.

Delta : 2 268 940 ns