Chip Electrical Tester and Protocol Analyser

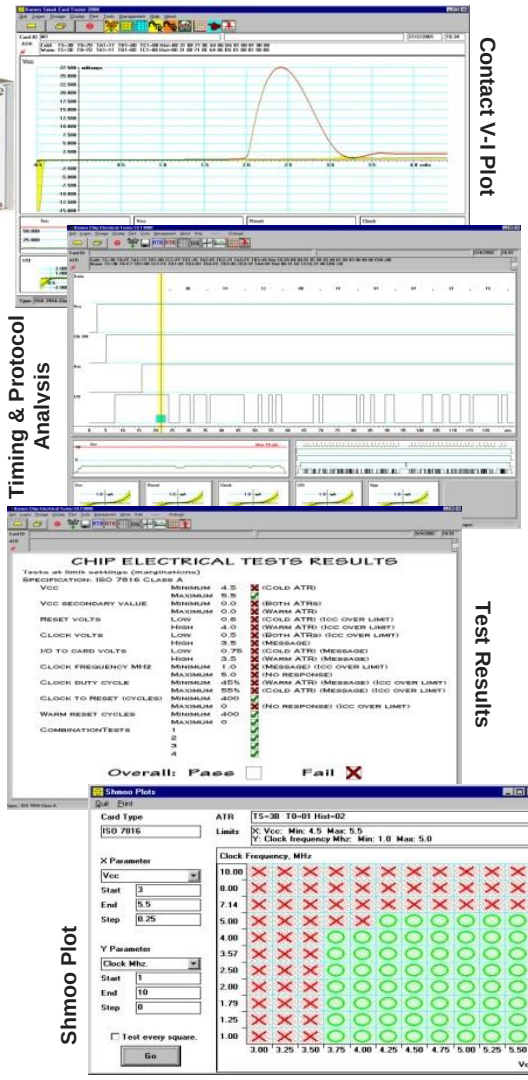
CET 3000

Reduces costs and risks for card manufacturers, personalisers and issuers by validating Level 1 chip compliance prior to formal laboratory tests

SUPPORTED SPECIFICATIONS

Level 1 Compliance
ISO 7816
EMV 2000 v4.1a
GSM 11.11

To protect the EMV standard and ensure the global interoperability of chip card and payment devices, card manufacturers, personalisers and issuers must participate in mandatory EMV Level 1 compliance testing. This test covers physical, electrical and transport level interfaces. Compliance is achieved following the submission of test results performed by an accredited test laboratory. The Barnes CET 3000 is a terminal simulator designed to perform pre-certification tests to validate ICC conformance to ISO, EMV and GSM Level 1 specifications. Should chip failure occur, it enables expert technical analysis to resolve the issues prior to the official compliance tests.



Solution Highlights

- Simulates all types of terminals, giving smart card developers, manufacturers, personalisers and issuers the means to quickly and automatically analyse ICC electrical and protocol performance and specification conformance.
- Enables QC / Production teams to perform automatic tests of chip (ICC) conformance to ISO, EMV and GSM Level 1 specifications.
- Expert technical analysis of new, reject and returned cards supports inward QC inspection and the identification and management of chip failure situations with chip vendors.

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THE BARNES ADVANTAGE

Barnes is the chosen test tool of Banks & Issuers, Card Manufacturers, Personalisation Bureaux and Test Laboratories worldwide.

Here are some reasons why:

BUSINESS AGILITY

Barnes test tools are easy to use by both technical and non-technical users, and speed up card development and payment scheme certification.

COST ELIMINATION

The high business costs and wasted resources of producing and issuing invalid cards is eliminated.

RISK REDUCTION

The reputational risk of issuing invalid EMV cards to end customers is reduced.

FUTURE PROOFED

Barnes works in partnership with all major payment schemes. As scheme rules evolve, Barnes rapidly make updated test script packs available to customers via the Barnes website.

SERVICE EXCELLENCE

Our clients have every confidence that whatever their test requirement, the Barnes team is always on-hand to deliver expert advice and fast support.

Features and Benefits

Electrical Characteristics Test
The current/voltage curve for each active contact on the card is plotted and automatically compared against expected values. This test detects defects such as broken bond wires, short and open circuits, damage of input circuits by Electrostatic Discharge and defective chips.

Protocol Timing
The CET 3000 generates control (margination) of all timings; variations of individual bit times within a byte are possible. Measurements are recorded in reports and viewable in a logic analyser display.

ATR / Message Test
Commands can be created and sent to the card, and the ICC response can be checked and displayed. The ICC is powered and a test message is sent; both Cold and Warm Answer To Reset (ATR) responses as well as the APDU/TPDU responses are received and displayed.

Electrical Margin Test
The Electrical Margination tests include repeating the ATR/Message tests at programmable sets of values for Supply (V_{cc}), Clock, Reset & I/O voltages, Clock frequency & duty cycle.

Current Monitoring Test
The standard test includes automatic continuous monitoring of the supply current (I_{cc}). Spot checks are made on the Reset, Clock (static) and I/O lines.

Shmoo Plot Tests
This powerful automatic test allows any two parameters (eg V_{cc} and frequency) to be varied over selected ranges (outside the ISO specifications if needed). The ATR and APDU message reply is checked for validity at each set of conditions and a plot of the "operating envelope" for the ICC is produced.

Scripting
The optional Developer facility offers test and application script development using TCL (Tool Control Language). This enables the tests performed by the CET 3000 to be customised with maximum ease, including modifying CET 3000 test scripts and adding user applications into the test process.

Calibration
Calibration can be carried out by the user. The calibration process is automatic under programme control using calibration cards and a small number of external measurements.

Rich Features
The tool enables test results to be stored to a database. It has a recall and batch test facility; programmable test limits; a script driven printable report; display and colour print of graphical results; logon; user control and log of usage.

Technical Specifications

Protocols: Supports T=0 and T=1

Clock Speeds: Selectable from 200KHZ to 20MHZ

Clock Duty Cycle: Variable from 30:70 to 70:30

Voltage Range: -0.3 to 6v including support for 1.8v cards

Timings: Measurement of card communication timings down to bit level, to nearest clock cycle

User Flexibility:
Control parity error injection and manipulate protocol timings. Run user applications whilst testing

Software: OS: Windows XP (including Windows 7 compatibility mode)

Interface: USB

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