

Production Test Systems

Functional Tests of Business Telephones

Application Note



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1 Overview/Measurement Task

Functional tests of business telephones in the production line.

The tests include

- stimulation of DUT
- electrical and acoustic tests
- optical inspection of display elements (LEDs)



Business telephone

2 Realization

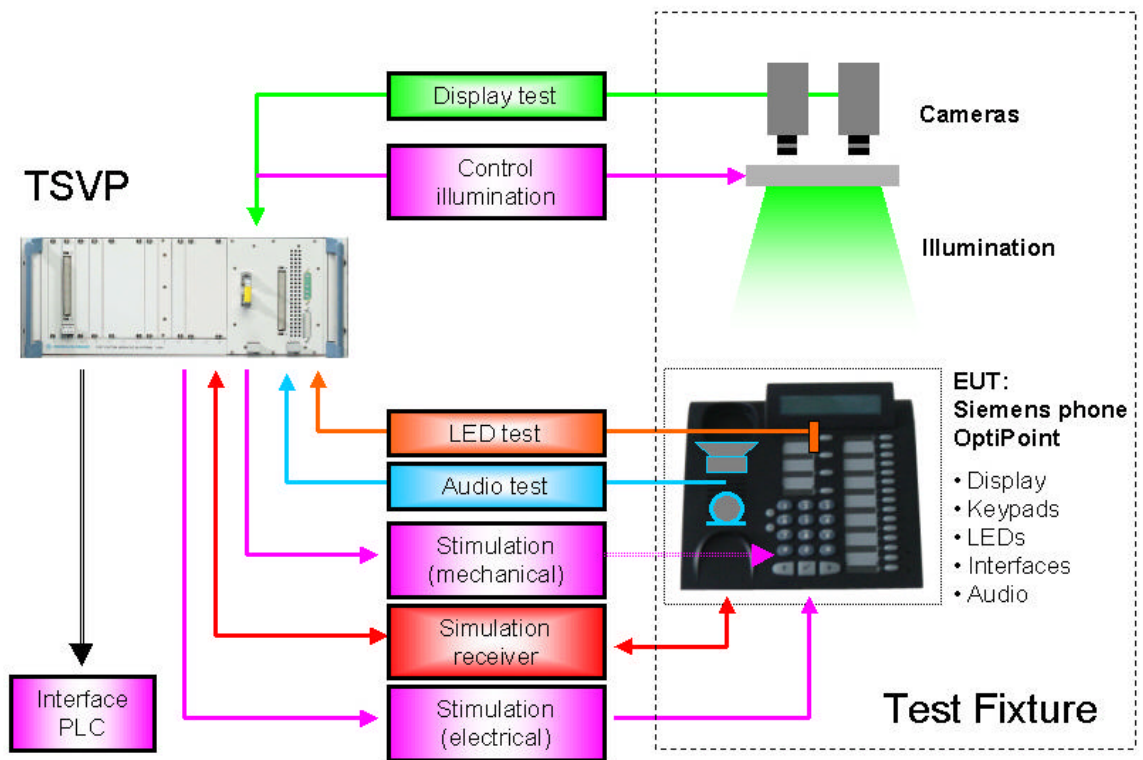
A compact solution for in-line testing was designed in close cooperation with the customer, Siemens Telefonfertigung in Leipzig, and produced on the basis of the R&S Production Test Platform TSVP (test system versatile platform). The following functions have been integrated:

- Actuation and testing of keyboard by means of pneumatic actuators
- Testing LEDs by means of optical sensors
- Testing the displays by means of a camera system and various test patterns
- Testing the hands-free facility via external acoustic couplers in the test adapter
- Testing the electrical interfaces for telephone receivers and add-on equipment
- Testing the analog, UPN and (optional ISDN) telecom interfaces.



TSVP – TS 7000

3 System Configuration



1SPVg/h/Siemens_L_Blocks/cha/bild_0

4 System Components

- | | |
|--------------------------|--|
| TSVP (cPCI- and PXI bus) | TS 7000 model |
| PC module | Pentium 3, Windows 2000 |
| Digital multimeter | Selftest, LED test |
| Matrix board | Signal switching |
| TTL I/O board | Digital I/O functions |
| Optocoupler board | SPS control |
| Open-collector board | Relay control, keypad actuators |
| PCM adaptation board | PCM interface control |
| LAN board | DUT control |
| Serial interface board | Carrier control |
| a/b measurement board | Simulation of a/b interface, AF generator, AF analyzer |
| Customer module | Telephone control |
| Frame grabber | Image capturing, illumination control |

5 System Software

- | | |
|--------------|------------------------------|
| Windows 2000 | Operating system (Microsoft) |
| GTOP | User interface (R&S) |
| GTSL | Software library (R&S) |

Functional Tests of Business Telephones

LabWindows, TestStand

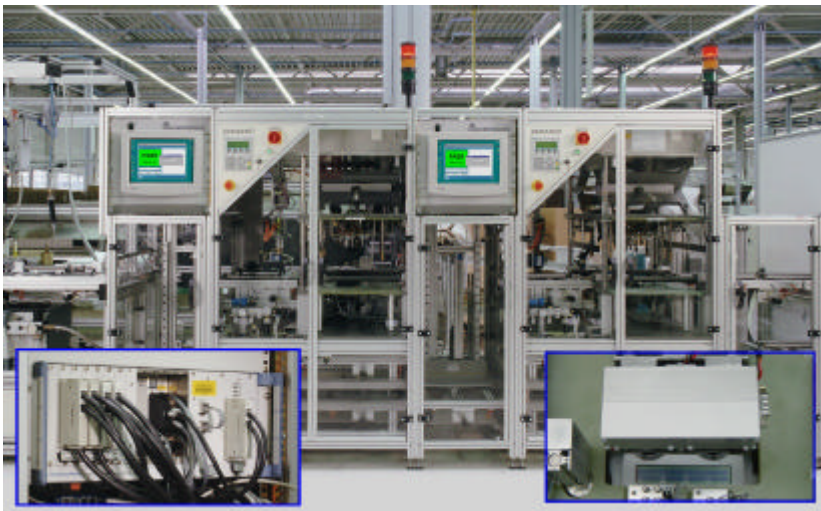
Test sequenzer (National Instruments)

6 Test Time

<40 s per system

Electrical and optical tests

7 Production Integration



Two test systems per line *)

*) Detailed view: Test system TSVP und camera module with telephone display

8 Ordering Information

In charge:

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