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Digitalni celiļ ni telekomunikacijski sistem (faza 2+) ï Specifikacija za preskuġanje skladnosti naroļ niġke identifikacijske kartice (SIM) (GSM 11.17, razliļ ica 7.0.2, izdaja 1998)

Digital cellular telecommunications system (Phase 2+) (GSM); Subscriber Identity Module (SIM) conformance test specification (GSM 11.17 version 7.0.2 Release 1998)

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Foreword

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Version 7.x.y

where:

7 indicates GSM Release 1998 of Phase 2+

x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

y the third digit is incremented when editorial only changes have been incorporated in the specification

National transposition dates	
Date of adoption of this EN:	3 December 1999
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1 Scope

The present document provides the Conformance Test Specification for the Subscriber Identity Module defined in GSM 11.11 [1], GSM 11.12 [9] and GSM 11.18 [10].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1998 document, references to GSM documents are for Release 1998 versions (version 7.x.y).

2.1 Normative references

[1] GSM 11.11: "Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[2] not used

[3] ISO/IEC 7816-1 (1987): "Identification cards - Integrated circuit(s) cards with contacts, Part 1: Physical characteristics".

[5] ISO/IEC 7816-2 (1988): "Identification cards - Integrated circuit(s) cards with contacts, Part 1: Dimensions and locations of the contacts".

[6] ISO/IEC 7816-3 (1989): "Identification cards - Integrated circuit(s) cards with contacts, Part 1: Electronic signals and transmission protocols."

[7] ISO/IEC 7811-1 (1995): "Identification cards - Recording technique - Part 1: Embossing"

[8] ISO/IEC 7811-3 (1995): "Identification cards - Recording technique - Part 3: Location of embossed characters on ID-1 cards"

[9] GSM 11.12: "Digital cellular telecommunications system (Phase 2); Specification of the 3 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[10] GSM 11.18: "Digital cellular telecommunications system (Phase 2+); Specification of the 1.8 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

2.2 Informative references

All test cases included in GSM 11.17 are based on phase 2, except 1.8V electrical tests which are a phase 2+ feature. Enhancements will be done time by time.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply in addition to the terms defined in GSM 11.11 [1];

Implementation Conformance Statement (ICS): A statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

ICS proforma: A document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CRn	Conformance Requirement 'n'
SIM	Subscriber Identity Module
ETS	European Telecommunication Standard
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
FT	Fixed Termination
ME	Mobile Equipment
MS	Mobile Station
TS	Test Specification

4 Test environment

This clause specifies several requirements which shall be met, and a number of rules which shall be adhered to before testing can proceed.

4.1 Test equipment

This subclause recommends a minimum specification for each of the items of test equipment referenced in the tests.

4.1.1 ME simulator

This item of equipment shall allow T=0 protocol communications to take place on both ID-1 and plug-in SIM cards. It shall be able to generate and send any command APDU and receive any of the possible responses. These commands may be generated manually, one at a time, or automatically from a predefined batch procedure containing one or more commands.

The ME simulator shall be able to support clock stop modes.

The ME simulator shall be able to accept an external clock signal to drive CLK (contact C3) of the SIM.

It shall be possible to access all the SIM contacts either directly or through test points.

4.1.2 Signal generation device

4.1.2.1 VCC

The voltage level for VCC (contact C1) of the SIM shall be adjustable between -0,5V and 6.0V to an accuracy of 1% of the nominal VCC voltage (e.g. 50mV for a 5V card).

The ME simulator shall be able to source current on the VCC contact in the range -2mA to 12mA statically and to deliver charges of > 400nAs without lowering the VCC-voltage for more than 10% of VCC nom.

4.1.2.2 RST

The generated voltage level for RST (contact C2) of the SIM shall be adjustable between -0,5V and 6.0V to an accuracy of 50mV.

The rise and fall times shall be adjustable from 0 to 500 us with an accuracy of 5us. *(to check if the SIM works with the defined rise and fall times.)*

The beginning of the rising edge is programmable from 1 clk-cycle to 50000 clk-cycles after enabling the clk-line.

4.1.2.3 CLK

This item of equipment shall be able to generate square wave signals for the clock on the SIM, any of which can be a single-shot or continuous signal, in the range 1MHz to 5MHz. The voltage levels for both high and low states shall be adjustable between -0,5V and 6,0V to an accuracy of 0,1V. The duty cycle of the clock signal shall be adjustable between 40% and 60% to an accuracy of 1%. It shall also provide control over the following parameters:

The voltage levels for both high and low states shall be adjustable between 0V and 6V to an accuracy of 1% of the nominal VCC voltage. The duty cycle of the clock signal shall be adjustable between 40% and 60% to an accuracy of 1% or 5ns whichever is the worst .

It shall also provide control over the following parameters:

- rise and fall time to an accuracy of 1% or 5ns whichever is the worst. *(5ns = 2,5% accuracy for f_{max} = 5Mhz).*

4.1.2.4 IO

The equipment shall be able to generate IO-Signals according to 11.11

The voltage levels for high and low states shall be adjustable between -0,5V and 6V to an accuracy of 1% of the nominal VCC voltage. The IO line in transmission mode (high bit) shall be programmable between state A (active driven output) and state Z (IO-voltage-driver inactive, current source I-IO-high active).

It shall also provide control over the rise and fall time of 100ns to 1000ns with an accuracy of 50ns.

The ME simulator shall be able to source and sink currents on the IO contact in the range -20 to + 20uA in state high and 0 - -1mA in state low (receiving mode) and shall be able to switch in transmission mode (outputting a high Bit) between voltage and current driving mode.

The timing of the bitstream (jitter, guardtime, etu-value, etc.) on the IO-Line shall be programmable with an accuracy of <=0,01etu or 2clk-cycles whichever is the worst.

4.1.3 Precision force-inducing contacting device

This item of equipment shall be able to apply a prescribed and maintained level of force onto one or more contacts of a SIM. The range shall be between 0 and 0,5N and accurate to 0,01N.

4.1.4 Temperature controllable environment

This item of equipment shall be able to control the temperature of a chamber large enough to enclose a SIM and card reader. The range of temperature control shall be between -25°C and +85°C to an accuracy of 0,5°C.

4.1.5 Temperature measuring device

This item of equipment shall be able to measure the temperature of the SIM to within 0,5°C. The range of this device shall allow measurement of temperatures between -25°C and +85°C.

4.1.6 Voltage measuring device

This item of equipment shall be able to measure static and transient voltages on any one of the contacts of the SIM. The measurable voltage range shall be between -2 and +7V to an accuracy of 1% of the nom. VCC voltage (e.g. 30mV for 3V cards) with a timebase accuracy of 25ns.

4.1.7 Precision measuring device

This item of equipment shall be able to measure both linear and radius of curvature dimensions to an accuracy of 0,01mm.

4.1.8 Current measuring device

This item of equipment shall be able to supervise the current levels for any one of the contacts of the SIM.

The Simulator shall be able to detect an over- or underload with a time resolution of ≤ 100ns.