

K1297 Classic

► Protocol Testers



The K1297 Protocol Tester is designed for use in development and test lab environments. In addition, the portable K1297 Compact Protocol Tester is ideal for service engineers performing difficult measurement tasks in the field, including installation and maintenance. All testing activities are supported by the following capabilities:

Monitoring

Displays the messages of a communication with features such as:

- Real-time recording to RAM and/or disk (recording file)
- Filtering for messages or message field content
- Execution of trigger actions upon special events
- Customized display for each layer
- Choice of display modes to suit your needs

Simulation

Enables user to send messages and react on received messages. Messages may be sent directly on a communication channel or to an emulator for further processing. K1297 features include:

- Simulation of multiple protocols in parallel
- Simulation on different interfaces and communication channels in parallel
- High-level SDL-based scripting language
- High-level message building system enables you to build protocol data units on a mnemonic basis
- Support of TTCN test description language

Emulation

The K1297 is able to react on messages of a specific protocol layer (as defined in the appropriate standard) automatically and without any programming. This allows you to focus on testing higher-layer protocols. The K1297 provides:

- Emulations for most L2 protocols

► Features & Benefits

A Wide Range of Applications
– Protocol Testing for Development, Operation and Maintenance, with More than 100 Protocols

Multiple Interfaces for Narrowband Networks
– Interworking Tests Over the Entire Network; One Tester, Easy to Connect to All Networks and Interfaces

Multi-channel Capability
– Powerful, Simultaneous Multi-port Protocol Testing on Different Links Over the Entire Network

Wide Set of High-layer Emulation
– Reacts on Messages of a Specific Protocol Layer, Including High-layer Protocols

Wide Set of Conformance Test Suites Based on TTCN
– Automated Test Case Selection Based on PICS and PIXIT

Wide Range of Filter and Trigger Functions for Monitoring
– Easily Displays Special Events with Playback and Statistic Functions

► Applications

Manufacturers of Communication Systems and Components

Functional Test During Development

Integration/Testing

System and Conformance Tests

Monitoring for Error Analysis

Functional Testing to Reproduce Error Situations

Private and Public Network Operators

Acceptance and Conformance Tests

Monitoring for Error Analysis in the Field

Functional Testing to Reproduce Error Situations

Private and Public Test Laboratories

Acceptance and Conformance Tests

Research and Teaching on Protocols and Test Methods

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▶ Protocol Testers

Conformance Testing

Tektronix offers a wide set of ready to use standardized test suites for protocol verification featuring:

- ▶ Automated test case selection based on PICS (Protocol Implementation Conformance Standard) and PIXIT (Protocol Implementation Extra Information)
- ▶ PICS and PIXIT changes may be performed online without recompiling
- ▶ Test execution in test case per test case, a set of selected test cases, per test group or whole test suite
- ▶ Full featured test result reporting
- ▶ Advanced error debugging utilities
- ▶ Remote control of test cases via TSP1+
- ▶ Support of compiling TTCN test suites with Tektronix TTCN compiler

Equipment Configuration

All K1297-Classic Applications are running on K1297-Classic (on limited supply) or in the compatibility window of K1297-G20 (see Product Summary K1297-G20 Base Software)

K1297-Classic Base Software

The user interface for test programs is comprised of menus, function keys and software commands as executable FORTH words. Depending on the type of the application program, integral software tools such as the SDL-style test manager and message building system also provide user interfaces. To generate test scenarios in SDL, it is possible, for example, to use any editor with an ASCII. The scripting language facilities offered by the SDL-style test manager are employed for programming the test scenarios via an editor.

Monitoring

With K1297-Classic software, a monitoring program is loaded to allow passive reading of the data on the signaling lines. In most cases, the K1297 is connected via special monitor jacks, as in the case of the PRIME module.

Simulation/Emulation

In this operating mode, the K1297 is active and replaces one or more communication partners of the implementation under test. A K1297 that has been fully equipped with PRIME modules can simulate up to 16 (12 for K1297 Compact) physical links.

The drop and insert mode constitutes a special form of simulation. Unlike active monitoring, where no changes are made to the protocol, this mode allows the user to intervene in the protocol.

Conformance Tests

Conformance tests are based on the principle of simulation/emulation and comprise a series of test cases that are, in turn, based on corresponding test specifications, for example, ETS 300 324-3 for V5.1. A distinction is made between traditional conformance tests, acceptance tests, validation tests and compatibility tests. A test series (test suite) mainly consists of several test groups, subgroups and test cases. Similarly, test cases can also consist of initialization sequences, preambles, test steps (partial tests), verification sequences and postambles. After being executed, each test step, test case, test group and test suite is given a verdict: pass, fail or inconclusive. Before they are executed, test suites are parameterized in PICS and PIXIT menus. The generated conformance test reports are ISO IS9646-3 compatible.

ASN.1-Compatible Concurrent TTCN (Tree and Tabular Combined Notation) Compiler

Besides other programming languages and tools supplied in the application software packages, a TTCN compiler (which complies with ISO IS9646-3 TTCN, reference number ISO/IEC 9646-3: 1992(E) and the changes in TTCN Edition 2, Delivery 6) is also available as an option for the K1297. The TTCN compiler is also capable of processing and converting ASN.1 data structures into K1297 format.

K1297-Classic Application Software



Core

Core Features and Benefits

- ▶ Flexible and Reliable Signaling Testing in the Core Network
- ▶ Efficient Protocol Analysis of the Core Network
- ▶ Call Trace and Call Sequence Monitoring in the Signaling System No. 7 (SS7)
- ▶ Connect up to 8 Signaling Links and up to 16 Timeslots for SS7/IN
- ▶ Support for Standard Interface Boards
 - E1 or DS1 for SS7/IN Network
- ▶ Processing of Almost All Worldwide Basic SS7 Protocols (ITU-T (White Book, Blue Book), ANSI/Bellcore, ETSI, MOU)
- ▶ Variety of Customized Protocol Packages for SS7/IN

Core Applications

- ▶ Monitoring, Simulation and Emulation Capabilities for SS7 Including IN
- ▶ Troubleshooting in the Core Network
- ▶ Detection of All Activities in the Core Network
- ▶ Acceptance Testing
- ▶ Conformance Testing
- ▶ Suitable for Network Manufacturers and Providers as Well as in the Laboratory and Development Environment

Core Software Packages

Monitoring

Several software packages for SS7/IN network monitoring and network analysis are available.

Simulation/Emulation

Simulation and emulation software packages are available. They support simulation of many SS7 protocols (MTP, SCCP, TUP, ISUP, TCAP, INAP) as well as emulation of the MTP Level 2 protocol.

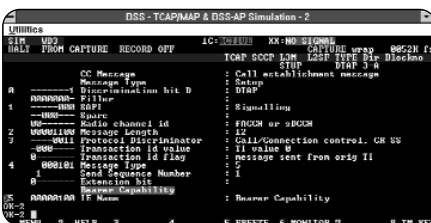
Conformance Testing

Test suites for conformance testing of the SS7/IN network meet international, European and national test standards. Capabilities are detailed in the K1297 product summary.

National Variants for SS7/IN Network

Numerous national and international protocol variants are offered.

Access



Access Features and Benefits

- ▶ Covers Most Areas of Public Switching Access Network and Access Protocols:
 - ISDN (ETSI, ITU)
 - QSIG (ETSI and ITU), DPNSS1
 - NMDS
 - V5.1/V5.2 (ETSI), GR303
 - Packet Services for ISDN (X.25, X75, PHI – Packet Handler Interface)
- ▶ End-to-end and Interworking Testing Support
- ▶ High Layer Emulations with Automated Call Generation for Some Protocols Available
- ▶ Tests the Entire Range of Public Switching with a Single Tester
- ▶ Comprehensive Testing with Wide Range of Up-to-date Conformance Tests
- ▶ Replacement of Expensive IUT Counterparts by K1297 with High Layer Emulation

Access Applications

- ▶ In-service Error Detection at Almost All Interfaces in the Public Switching Access Network Areas
- ▶ Protocol Implementation Verification for Manufacturers, Test Labs and Operators
- ▶ Functional and Regression Testing
- ▶ The Customers Can Replace the Communication Partner of the Implementation Under Tests (IUT) by the Protocol Tester with the Appropriate Access Application Emulating the Replaced Network Element

Access Technology Overview

ISDN

ISDN protocols are used between an ISDN handset/telephone (USER) and the ISDN core network (NET). K1297 software packages may be used for testing USER as well as NET. The protocol is usually transferred on the following physical interfaces:

- ▶ Basic Rate Interface/Access (BRA/BRI) offering 2 64 Kb/s bearer channels and a 16 Kb/s D-channel for signaling. Tektronix offers physical interfaces for the S0 and UK/U2B1Q reference points
- ▶ Primary Rate Interface/Access (PRI/PRA) offering 30 64 Kb/s bearer channels and a 64 Kb/s D-channel for signaling. Tektronix offers physical interfaces for the S2m reference points with E1 or DS1 interfaces

DPNSS1

Digital Private Network Signaling System: A predecessor of QSIG used for digital private network signaling.

QSIG

This protocol is a special application of ISDN and used between ISDN private branch exchanges (PABX) connected indirectly through the ISDN core network. The QSIG protocol components are passed through the core network transparently from one ISDN PABX to another PABX. The K1297 protocol packages allow all applications to be applied to this special ISDN protocol aspect.

NMDS

NMDS is an extension ISDN by full V5.1-like PSTN (analog line) capabilities. This is accomplished by transferring the V5.1 PSTN protocol in parallel to the ISDN protocol on the same interface.

Note: NMDS requires a BRI.

V5.1/V5.2

These are ETSI protocols families used between the core network and the access network. These interfaces support the transparent exchange of ISDN signaling information and provide protocols for support of analog line interfaces. V5.2 in addition to V5.1 provides concentration and protection functions. Both protocols are usually transferred over E1 links. The V5.1/V5.2 packages also support the handling of basic ISDN protocols.

GR303

This is an ISDN protocol based protocol for communication between the core and access network. The protocol is defined by Telcordia and mainly applicable for the USA. It has similar functions as the V5.2 interface and requires DS1 interfaces.

Packet Services for ISDN

X.25, X75 and PHI – Packet Handler Interface protocols are available. This is a packet switching protocol. All ISDN packages support the X.25/X.75 protocol in the B-channel PHI is according to ETS 300 099 from April 1998.

K1297 Classic

▶ Protocol Testers

Software Packages Access

Monitoring

These packages decode received messages into a human readable format for a set of different protocols. They offer all the standard monitoring features as given in the K1297 Hardware and basic Software section.

Various packages are available for monitoring functionality.

Simulation/Emulation

These packages allow generation of messages with the MBS, and sending as well as receiving messages on an interface. The Emulation packages in addition offer emulations of different protocol layers.

K1297-Classic offers simulation and emulation functionality. Packages have the same protocol content as the appropriate monitoring packages with usually at least a Layer 2 emulation added.

Packages are available to add high layer emulation capabilities to the simulation packages.

Various packages are available for simulation/emulation functionality.

Conformance Testing

Implementations of various test suites are available for:

- ▶ ISDN with international, European and national test standards
- ▶ V5.1 and V5.2 ETSI tests suites for LE (Local Exchange), AN (Access Network), DLL (Data Link of AN and LE)

These implementations use the features of TTCN:

- ▶ Running of entire test suites or selection of particular test groups and cases
- ▶ Report and logging options for every purpose

National Variants

There are extension of the K1297-Classic monitoring and simulation packages available adding national and international variants for:

- ▶ National variants for Europe
- ▶ National variants for America
- ▶ National variants for the rest of world

Mobile Radio Network

Mobile Radio Network Features and Benefits

- ▶ Uses E1 or DS1 Interface
- ▶ GSM/DCS 1800/PCS 1900:
 - Phase 2, BSSAP, DTAP, TCAP/MAP, SS PROTOCOL, SMCP, SMRP, SMTP
 - A_{bis} (64 Kbit and 16 Kbit)
 - CAMEL AP
 - MAPV3
- ▶ CDMA:
 - IS634, IS637, IS41B, IS41C, IOS2.4
- ▶ Open Interface: Lets User Send Faulty Messages (e.g. to a BSC to Test How the BSC Reacts to Errors)
- ▶ High Flexibility: User Can Program Own State Machine, Adding to Standardized Scenarios

Mobile Radio Network Applications

- ▶ Simulation of Different Network Elements of a Mobile Network (Including HLR, VLR and Others) Simultaneously



Software Packages Mobile Radio Network

Monitoring

- ▶ Monitoring of up to 8 E1/DS1 links
- ▶ Selectable from short to complete depth of decoding for each layer
- ▶ Trigger and filter mechanism
- ▶ Selectable color per data direction

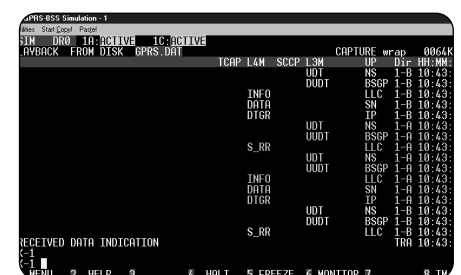
Simulation/Emulation

- ▶ Simulation on up to 16 E1/DS1 links at the same time
- ▶ Flexible state oriented programming interface
- ▶ Emulation of MTP Layer 2 protocol
- ▶ Simulation of different SS#7 Layer 3 connections on the same interface
- ▶ Up to eight simultaneous and independent state machines (Test Manager)
- ▶ Communication mechanisms between different Test Managers
- ▶ Message Building System

National Variants

- ▶ ICO
- ▶ IGAP

GPRS



GPRS Features and Benefits

- ▶ Support for Standard Interface Boards and All Essential GPRS Interfaces – A Single Test Solution for All Protocols and Interfaces Offers Flexible and Reliable Testing of GPRS Signaling and Data Transmission in the GSM Network
- ▶ Efficient Analysis of GPRS Protocol Functionality – Quick Switching Between Test Scenarios With Minimal Reconfiguration
- ▶ Combined Testing of Complete GSM Network and GPRS – No Need to Maintain Separate Test Equipment for Each Technology
- ▶ Prepared for Future GPRS Implementations based on IS136 – Today's Investment is Ready for Tomorrow's Developments
- ▶ K1297 Can Replace Expensive IUT Counterparts with High Layer Emulation and Controlling Scripts – Drastically Reduce Equipment Development and Integration Costs

GPRS Applications

- ▶ GPRS Monitoring, Simulation and Emulation
- ▶ In Service Error Detection for most GPRS Interfaces in the GSM Network
- ▶ Detection of All Activities in the CORE Network
- ▶ Protocol Implementation Verification for Manufacturers, Test Labs and Operators
- ▶ Functional and Regression Testing Combined with Basic Load Testing Capabilities
- ▶ Acceptance Testing
- ▶ Conformance Testing
- ▶ The Protocol Tester Can Replace the Implementation Under Test (IUT). Scripted Configurations Control the GPRS Emulation, Allowing the Tester to Behave Like the Replaced Network Element
- ▶ User Layer Testing with Standard Windows NT-based Applications including Web Browsers, Web Servers, FTP Clients, FTP Servers and WAP Applications

Software Packages GPRS

Monitoring

These packages decode received messages into a human readable format for a set of protocols. They offer all the standard monitoring features described in the K1297 HW and basic SW section.

- ▶ Four PRIME boards supported, each offering 2 monitoring ports and 4 bi-directional time slots
- ▶ Frame Relay with channelized, unchannelized and fractional mode
- ▶ Monitoring of 4 Ethernet Interfaces in unidirectional mode
- ▶ Monitoring of 2 Ethernet Interfaces in bi-directional mode with active monitoring

There are various packages (see ordering information) for monitoring functionality available.

Simulation/Emulation

These packages support message generation with the MBS and sending/receiving of messages on an interface. Various protocol layers can also be emulated.

- ▶ Four PRIME boards supported, each offering 4 ports and 8 time slots
- ▶ Frame Relay with channelized, unchannelized and fractional mode
- ▶ Simultaneous simulation and emulation of several GPRS connections
- ▶ Communication mechanisms for data exchange between various test programs
- ▶ Communication mechanism via virtual Ethernet driver between Windows NT and GPRS simulations/emulations

Packages for simulation and/or emulation of all layers up to the user IP layer for the G_b, G_i, G_n, G_r and G_s interfaces are available.

Conformance Testing

Since standards for GPRS conformance tests are yet to be defined, Tektronix is developing multiple test suites in cooperation with leading GPRS manufacturers. The main protocol layers to be tested are NS, BSSGP, LLC, SNDCP and GMM/SM on the Gb interface because these protocols are completely new developments for GPRS. GPRS conformance tests are prepared for GTP testing on the Gn interface.

▶ Characteristics

System Software

Basic Functions of the K1297-Classic Software Report Generation – Decodes of OSI-layers 1 to 7 (protocol dependent).

Value displayed as: Hexadecimal, decimal, character (ASCII, EBCDIC), mnemonic, block or time.

Time Stamps – Transmit and receive data and signal state changes of control lines are provided with time stamps. Resolution: Min. 1 μs. Accuracy: Min. 125 μs.

Data Acquisition – Data signals can be acquired and passed on to up to 3 destinations at the same time: To the Monitor window. To the Recording File. To the Capture RAM.

Filter – There are separate filters for each destination: Monitoring window, recording file and capture RAM. Each filters for interface events, frame events or trace messages.

Trigger – Up to four independent triggers for: Interface events, full capture RAM and full disk.

Disk Functions – Data recording in wrap and full mode, data playback, direction of data in capture RAM to disk and vice versa.

Simulation Features – (Depending on application software.)

Message Building System for all supported protocols –

Menu controlled creation and storage of PDU frames and messages.

User and application parts in message pools.

Editing in hex and mnemonic form.
 Pasting of messages from monitor to message pool.
 Display of generated messages.

Renaming, deletion and insertion of messages in pool.

Auto and manual mode for information element sequencing.

K1297 Classic

► Protocol Testers

Simulation Principle – The SDL-style test manager utilizes the State Machine concept (Cf. CCITT Z.101 to 104 (today ITU-T), SDL) for protocol simulation and performing interactive tests. Elements of the State Machine include: Current state, actions to be executed, state changes, follow-up state.

Test Manager – Up to eight independent test managers (parallel processes) per application.

SDL style programming.

Up To 256 states per test manager.

Test manager status window with states.

Level 2/layer 2 address information, and layer 3 CR/PD information.

Print Function – Contents of capture RAM, recording files and message pools. Print function interfaces with Windows print function (this allows printing to an ASCII File).

Counters – Unlimited number of programmable counters (depending on RAM capacity).

Timers – 128 programmable software timers, resolution: 20 ms.

TTCN Software Packages for K1297-Classic

TTCN (according to ISO 9646-3) is an abstract test description language. Test suite specific adaptations are inevitable and always necessary to adapt an ATS (abstract test suite) to a particular protocol tester platform. For generating and compiling self-defined TTCN tests (for example, conformance tests) Tektronix offers the following software products:

TTCN MP Compiler

- Abstract test description language
- Conforms to ISO/IEC 9646/1-7
- Full ASN.1 support
- Including concurrent TTCN

TTCN-RTE (Run Time Environment)

- Required to run TTCN test cases on other K1297
- Included in conformance test packages (See software product summaries for Mobile Radio Network, ACCESS, Core, etc.)

TTCN Adaptation File Preparation

In the K1297, two files are used to realize those adaptations: SPECIAL and INI files. Both files are necessary for compilation of an ATS on the K1297 with the TTCN compiler (7KK1297-8DT11) and have to be modified to each ATS. Tektronix can prepare custom SPECIAL and INI files on request.

► Ordering Information

Core Monitoring

7KK1297-6AW11 – K1297-Classic SW Mon Core; SS#7; MTP and SCCP incl. MTP level 2 and PCR and basic SCCP emul. acc. to CCITT Blue Book, ITU-T White Book recommendations and corresponding ETSI standards; Prereq.: AP-1 (7KK1297-5AAxx) and 7KK1200-2PE, -2PT or -2PM.

7KK1297-6BW11 – SW: SS#7 Monitor TUP and ISUP (BB,WB,ETSI) Acc. to CCITT Blue Book, ITU-T White Book recommendations and corresponding ETSI standards, ANSI; English documentation (online); Prereq.: 7KK1297-6AW11.

7KK1297-6CW11 – SW: SS#7 Monitor TCAP and INAP (ITU,ETSI) Acc. to ITU-T Q.1218 Intelligent Network Capability set 1 (CS1) recommendation and ETSI CORE-INAP standard ETS 300 374-1 1993-11 (DE/SPS3015); English documentation (online); Prereq.: 7KK1297-6AW11.

Core Simulation/Emulation

7KK1297-7AW11 – K1297-Classic SW Sim Core; SS#7; MTP and SCCP incl. MTP level 2 and PCR and basic SCCP emul. acc. to CCITT Blue Book, ITU-T White Book recommendations and corresponding ETSI standards; Prereq.: AP-1 (7KK1297-5AAxx) and 7KK1200-2PE, -2PT or -2PM.

7KK1297-7BW11 – SW: SS#7 Simulation TUP and ISUP (BB,WB,ETSI) Acc. to CCITT Blue Book, ITU-T White Book recommendations and corresponding ETSI standards, ANSI; English documentation (online); Prereq.: 7KK1297-7AW11.

7KK1297-7CW11 – SW: SS#7 Simulation TCAP and INAP (ITU,ETSI) Acc. to ITU-T Q.1218 Intelligent Network Capability Set 1 (CS1) Recommendation and ETSI CORE-INAP standard ETS 300 374-1 1993-11 (DE/SPS3015); English documentation (online); Prereq.: 7KK1297-7AW11.

National Variants for SS7/IN Network

7KK1297-8AA11 – SW: SS#7 Extension National variants for European countries.

7KK1297-8AB11 – SW: SS#7 User parts N.A.M.; Software: SS#7 Extension National Variants for North American countries.

7KK1297-8AC11 – SW: SS#7 Extension National variants for other countries than Europe and North America.

Core Conformance Testing

7KK1297-8PA11 – K1297-Classic SW Core; SS#7 Conformance Tests ISUP (ITU); incl. SIEMEM according to ITU Q.784/Q785 Blue/White Book, Q784: 220 and Q.785: 61 test cases; Prereq.: AP-1 (7KK1297-5AAxx) and 7KK1297-7BW11.

7KK1297-8PC11 – K1297-Classic SW Core; SS#7 Conformance Tests MTP according to Q.781/Q782 White Book and prETS 300 008-3 (1996) V1.12; L2: 141 and L3: 229 test cases; including 7KK1297-7AW11; Prereq.: AP-1 (7KK1297-5AAxx) with 32 MB.

Access Monitoring

7KK1297-6FW11 – SW: ISDN Monitor (DSS1, Q.931) and X.25 D-Channel (SAPI=16)(BRI ONLY); SPEC.: ETS 300 125 9'90, 300 102-1 2'92, 300 402-1, several ETSI-SS, ITU Q.921/Q.931 Blue/White Book; Interface: BRI/PRI; English documentation (online).

7KK1297-6JW11 – SW: V5.1 Monitor (AN and LE); Version:1.22; Specifications: PRETS 300 324-1 Supp. Prot.: L2: LAPV5DL; ETS 300125 (LAPD), Q.921, Q.922 (LAPF)/L3: V5.1PSTN, Control Protocol ETS 300 102-1, UND X.25 P-DATA: Q.931, Q.933.

7KK1297-6KW11 – SW: V5.2 Monitor (AN and LE); Version:1.22; Specifications: PRETS 300 347-1, Add. Protocols to V5.1: BBC, protection, link control; Prereq.: Interface: PRI; COMMENT: with English documentation.

7KK1297-6LW11 – SW: NMDS Monitor; SW: NMDS Monitor, Specifications: EN301 141-1 V1.2.1 (7/98).

7KK1297-6WG11 – SW: SS7 Monitor X.25; SW: Monitor connection oriented X.25 in B channel.

7KK1297-6WH11 – SW: ISDN Monitor (PHI); SW: ISDN Monitor for ETSI-Package Handler Interface (PHI); Specifications: Draft ETS T/NA2 (89) 10, 3'90; Interface: PRI.

7KK1297-6WJ11 – SW: SS7 Monitor X.75; SW: Monitor Connection oriented X.75.

7KK1297-6WW11 – SW: ISDN Monitor (DPNSS1); SW: ISDN Monitor for D-Channel DPNSS1; Specifications: BTNR 188 Issue 6, 1995; Interface: PRI.

Access Simulation/Emulation

7KK1297-7FW11 – SW: ISDN Simulation (Q.931 and DSS1 incl. suppl. serv.) and X.25 D-Channel (SAPI=16)(BRI ONLY); SPEC.: ETS 300 125 9'90, 300 102-1 2'92, 300 402-1, SEVERAL ETSI-SS, ITU Q.921/Q.931 Blue/White Book; English documentation (online).

7KK1297-7JW11 – SW: V5.1 Simulation (AN and LE); V.:1.22; Specifications: PRETS 300 324-1 Supp. Prot.: L2: LAPV5DL; ETS 300125 (LAPD), Q.921, Q.922 (LAPF)/L3: V5.1 PSTN, Control Protocol ETS 300 102-1.

7KK1297-7KW11 – SW: V5.2 Simulation (AN and LE); V.:1.22; Specifications: PRETS 300 347-1, add. Protocols to V5.1: BBC, Protection, Link Control; Prereq.: Interface: PRI; COMMENT: With English documentation.

7KK1297-7LW11 – SW: NMDS Simulation SW: Simulation NMDS, Specifications: EN301 141-1 V1.2.1 (7/98).

7KK1297-7WG11 – SW: SS7 Simulation X.25 SW: Simulation connection oriented X.25 in B-Channel.

7KK1297-7WH11 – SW: ISDN Simulation for ETSI-Package Handler Interface (PHI); Specifications: Draft ETS T/NA2 (89) 10, 3'90; Interface: PRI; English documentation (online).

7KK1297-7WJ11 – SW: SS7 Simulation X.75; SW: Simulation Connection oriented X.75.

7KK1297-7WW11 – SW: ISDN Simulation (DPNSS1); SW: ISDN Simulation for D-Channel DPNSS1; Specifications: BTNR 188 Issue 6, 1995; Interface: PRI.

7KK1297-8QC11 – SW: V5.1/V5.2 L3 LE Emulation for up to 10 PSTN user ports at the AN and WITH 10 Virtuell user ports in the K1297 (forth script); Prereq.: 7KK1297-7KW11.

7KK1297-8QD11 – SW: V5.1/V5.2 L3 AN Emulation for up to 10 PSTN user ports in the LE and WITH 10 Virtuell user ports in the K1297 (forth script); Prereq.: 7KK1297-7KW11.

Access Conformance Testing

7KK1297-8JB11 – SW: V5.1 Conformance Tests: L3 LE (Local Exchange); Specifications: ETS 300 324-3; Prereq.: 7KK1297-7JW11; Interface: PRI; Comment: With English documentation (online); Prereq.: AP with 32 MB.

7KK1297-8JC11 – SW: V5.1 Conformance Tests: L3 AN (Access Network); Specifications: ETS 300 324-3; Prereq.: 7KK1297-7JW11; Interface: PRI; Comment: With English documentation (online); Prereq.: AP with 32 MB.

7KK1297-8JD11 – SW: V5.1 Conformance Tests: L2 DLL (Data Link Layer); Specifications: ETS 300 324-3; Prereq.: 7KK1297-7JW11; Interface: PRI; Comment: With English documentation (online); Prereq.: AP with 32 MB.

7KK1297-8JG11 – SW: V5.2 Conformance Tests: L2 (DLL) (AN and LE); Specifications: ETS 300 347-3 F.; Prereq.: 7KK1297-7KW11; Interface: PRI; Comment: With English documentation (online); Prereq.: AP with 32 MB.

7KK1297-8JE11 – SW: V5.2 Conformance Tests: L3 LE (Local Exchange); Specifications: ETS 300 347-3 F.; Prereq.: 7KK1297-7KW11; Interface: PRI; Comment: With English documentation (online); Prereq.: AP with 32 MB.

7KK1297-8JF11 – SW: V5.2 Conformance Tests: L3 AN (Access Network); Specifications: ETS 300 347-3; Prereq.: 7KK1297-7KW11; Interface: PRI; Comment: With English documentation (online); Prereq.: AP with 32 MB.

7KK1297-8UC11 – SW: ISDN Conformance Tests CTR3 SW: ISDN Conformance Tests: CTR 3 (TBR3); Specifications: ATS: V1.0 2/97; Interface: BRI; Prereq.: AP with 32 MB; With English documentation (online).

7KK1297-8UD11 – SW: ISDN Conformance Tests: CTR 4 (TBR4); Specifications: ATS: V1.0 2/97; Interface: PRI; with English documentation (online); Prereq.: 7KK1297-7FW11.

7KK1297-8UT11 – SW: ISDN Conformance Tests: L3 BC NT SW: ISDN Conformance Tests, LAYER3, Basic Call, Network Side, Acc. to DSS1 ETS 300 403-7, 652 Test Cases; Interfaces: BAI and PRI; Prereq.: AP with 32 MB.

7KK1297-8UW11 – SW: ISDN Conformance Tests, LAYER3, Basic Call, TE SIDE, Acc. to ETS 300 403-5, 668 Test Cases, Interfaces: BAI and PRI; Prereq.: AP with 32 MB, 7KK1297-7FW11; With English documentation (online).

7KK1297-8UX11 – SW: ISDN Conformance Tests: L2 NT/TE SW: ISDN Conformance Tests, LAYER 2, Network and User Side Acc. to ETS 300 402-7 10/99; 565 Test Cases; Interfaces: PRI, BAI; With English documentation (online).

Access National Variants

7KK1297-8AK11 – SW: ISDN National Variant Europe SW: ISDN: National Variant for Europe: 1TR6 (FTZ 1TR3 12'91), CORNET-T, V2.6B 2'91, CORNET-N V1.3D, -T-RADIO, DKZE (FTZ 12TR7 5'90), ECMA, ISO, Polish, VN2 '89, VN3 '90, VN4 '91.

7KK1297-8AL11 – SW: ISDN National Variant American SW: ISDN: National Variant for America: AT and T/5ESS BRI1, 5ESS BRI3, 5ESS PRI), ANSI T1.607 1990, ARINC 746 (CTU Bearer, CDS).

7KK1297-8AM11 – SW: ISDN Other National Variant SW: ISDN: Other National Variant: NTT-INS NET 3'93 (Japan)/V1 (Israel)/Australia.

GSM and CDMA Monitoring

7KK1297-6EW11 – SW: GSM Monitor TCAP and MAP and MOU-ISUP and BSS-AP Acc. to ETSI GSM/DCS 1800 Phase 2 Standards; English documentation (online); Prereq.: 7KK1297-6AW11.

7KK1297-6GW11 – SW: GSM Monitor TCAP and Map Version 3; Acc. to GSM 09.02 V.5.50; English documentation (online); Prereq.: 7KK1297-6AW11.

7KK1297-6HW11 – SW: GSM Monitor (CAMEL) SW: GSM Monitor TCAP and CAP PH 3 (CAMEL Application PART) Acc. to GSM 09.78 V.4.40; With English documentation (online).

7KK1297-6QW11 – SW: SS7 Monitor (CDMA) SW: CDMA Monitor US with ANSI and ITU MTP – TIA/EIA/IS-634 (12/95) – TIA/EIA/IS-41B (12/96) – TIA/EIA/IS-41C (2/96) – TIA/EIA/IS-637 (SMS,12/95).

7KK1297-6DW11 – SW: GSM Monitor ABIS Acc. to ETSI GSM/DCS 1800 Phase 2 Standards, ABIS for 16 or 64 Kb/s Signaling; English documentation (online); Prereq.: 7KK1297-6AW11.

GSM and CDMA Simulation/Emulation

7KK1297-7EW11 – SW: GSM Simulation TCAP and MAP and MOU-ISUP and BSS-AP, Including Basic TCAP Emulation, Acc. to ETSI GSM/DCS 1800 Phase 2 Standards; English documentation (online); Prereq.: 7KK1297-7AW11.

7KK1297-7GW11 – SW: GSM Simulation TCAP and MAP Version 3 Acc. to GSM 09.02 V.5.50, Including Basic TCAP Emulation; English documentation (online); Prereq.: 7KK1297-7AW11.

7KK1297-7HW11 – SW: GSM Simulation (CAMEL) SW: GSM Simulation TCAP and CAP PH 3 (CAMEL Application Part) Acc. to GSM 09.78 V.4.40, Including Basic TCAP Emulation; With English documentation (online).

7KK1297-7QW11 – SW: SS7 Simulation (CDMA) SW: CDMA Simulation US with ANSI and ITU MTP and – TIA/EIA/IS-634 (12/95) – TIA/EIA/IS-41B (12/96) – TIA/EIA/IS-41C (2/96) – TIA/EIA/IS-637(SMS,12/95).

7KK1297-7DW11 – SW: GSM Simulation ABIS (ETSI GSM/DCS1800 PH.2) Acc. to ETSI GSM/DCS 1800 Phase 2 Standards, ABIS for 16 or 64 Kb/s Signaling; English documentation (online); Prereq.: 7KK1297-7AW11.

7KK1297-8AE11 – SW: ICO User Parts SW: BSSMAP User Part for ICO; Specifications: MSC-TNM Interface WG3 DD 6 0474 E, A'-Interface WG2 SN 7 0019 A5.

7KK1297-8AD11 – SW: SS#7 User Parts IGAP SW: IRIDIUM Gateway Application Part (IGAP); Specifications: IRIDIUM GSC 1'94.

GPRS Monitoring

7KK1297-6ZA11 – K1297-Classic SW Mon GPRS; G_b Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-6ZB11 – K1297-Classic SW Mon GPRS; G_i Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-6ZC11 – K1297-Classic SW Mon GPRS; G_n Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-6ZE11 – K1297-Classic SW Mon GPRS; G_s Interface, BSSAP+; Prereq.: AP-1 (7KK1297-5AAxx) and 7KK1297-6AW11.

7KK1297-6ZF11 – K1297-Classic SW Mon GPRS; G_c, G_d, G_r, G_t Interface, TCAP, MAP V6.x and SMS; Prereq.: AP-1 (7KK1297-5AAxx) and 7KK1297-6AW11.

7KK1297-6ZM11 – K1297-Classic SW Mon GPRS A_{bis}; ALCATEL A_{bis} Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-6ZN11 – K1297-Classic SW Mon GPRS A_{bis}; Lucent A_{bis} Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-6ZP11 – K1297-Classic SW Mon GPRS A_{bis}; Siemens A_{bis} Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-6ZQ11 – K1297-Classic SW Mon GPRS A_{bis}; Ericsson A_{bis} Interface; Prereq.: AP-1 (7KK1297-5AAxx).

K1297 Classic

▶ Protocol Testers

7KK1297-6ZR11 – K1297-Classic SW Mon GPRS
A_{bis}; NORTEL A_{bis} Interface; Prereq.: AP-1
(7KK1297-5AAxx).

GPRS Simulation/Emulation

7KK1297-7ZA11 – K1297-Classic SW Sim GPRS;
G_b Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-7ZB11 – K1297-Classic SW Sim GPRS;
G_i Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-7ZC11 – K1297-Classic SW Sim GPRS;
G_n Interface; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-7ZD11 – K1297-Classic SW Sim GPRS;
Load Generator; Prereq.: AP-1 (7KK1297-5AAxx).

7KK1297-7ZE11 – K1297-Classic SW Sim GPRS;
G_s Interface, BSSAP+; Prereq.: AP-1
(7KK1297-5AAxx) and 7KK1297-7AW11.

7KK1297-7ZF11 – K1297-Classic SW Sim
GPRS; G_c, G_d, G_f, G_r Interface, TCAP, MAP V6.x
and SMS; Prereq.: AP-1 (7KK1297-5AAxx) and
7KK1297-7AW11.

7KK1297-7ZP11 – K1297-Classic SW Sim
GPRS A_{bis}; Siemens A_{bis} Interface; Prereq.: AP-1
(7KK1297-5AAxx).

GPRS Conformance Testing

7KK1297-8ZA11 – K1297-Classic SW GPRS
Conformance Test; NS, BSSGP of BSS; TTCN
Conformance Test Suite for GPRS NS and BSSGP
Protocol, IUT is BSS; Prereq.: 7KK1297-7ZA11.

7KK1297-8ZB11 – K1297-Classic SW GPRS
Conformance Test; NS, BSSGP of SGSN; TTCN
Conformance Test Suite for GPRS NS and BSSGP
Protocol, IUT is SGSN; Prereq.: 7KK1297-7ZA11.

7KK1297-8ZC11 – K1297-Classic SW GPRS
Conformance Test; LLC of SGSN; TTCN Conformance
Test Suite for GPRS LLC Protocol, IUT is SGSN;
Prereq.: 7KK1297-7ZA11.

7KK1297-8ZD11 – K1297-Classic SW GPRS
Conformance Test; LLC of MOBILE; TTCN
Conformance Test Suite for GPRS LLC Protocol;
IUT is Mobile Station connected via BSS; Prereq.:
7KK1297-7ZA11.

7KK1297-8ZE11 – K1297-Classic SW GPRS
Conformance Test; SNFCP of SGSN; TTCN
Conformance Test Suites for GPRS SMDCP Protocol,
IUT is SGSN; Prereq.: 7KK1297-7ZA11.

7KK1297-8ZF11 – K1297-Classic SW GPRS
Conformance Test; SMDCP of MOBILE; TTCN
Conformance Test Suite for GPRS SMDCP Protocol;
IUT is Mobile Station connected via BSS; Prereq.:
7KK1297-7ZA11.

7KK1297-8ZH11 – K1297-Classic SW GPRS
Conformance Test; GMM/SM of SGSN; TTCN
Conformance Test Suite for GPRS GMM/SM Protocol,
IUT is SGSN; Prereq.: 7KK1297-7ZA11.

7KK1297-8ZL11 – K1297-Classic SW GPRS
Conformance Test; GMM/SM of MOBILE; TTCN
Conformance Test Suite for GPRS GMM/SM Protocol;
IUT is Mobile Station connected via BSS; Prereq.:
7KK1297-7ZA11.

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