R&S®ELEKTRA
EMC TEST SOFTWARE

Specifications

Data Sheet
Version 13.00

ROHDE&SCHWARZ
Make ideas real

CONTENTS

Software version

The following specifications are valid for software version 05.00.

User interface languages

The following user interface languages are supported: English, German, Chinese

Minimum system requirements

Operating system	Windows 10, 64 bit; Windows 11, 64 bit
CPU	PC with Intel® Core™ i5/i7/i9 processor (or comparable) or laptop/tablet with Intel® Core™ i7 processor (or comparable)
Free RAM	8 Gbyte
Free hard disk space	250 Gbyte hard disk, solid-state disk (SSD) recommended
Graphics resolution	1280 × 720 pixel, higher resolution or dual screen recommended
USB	2.0
LAN	100 Mbit LAN interface, Gigabit LAN recommended

R&S®ELEKTRA license dongle

R&S®EMCPC license dongle

Key features	smart card and USB 2.0 smart card reader (stick)

Base software packages

R&S®ELEMI-E essential EMI test software for conducted and radiated emissions

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Software features	
Measurement environment	• radiated emission in SAC, FAR, OATS, FSOATS and TEM waveguide • conducted emission with AAN, AMN, AN, LISN, CDN, CDNE, CP, CVP, ISN and VP • disturbance power with absorbing clamp
Test setup	test template including hardware setup: • one receiver can be configured with settings per test template • multiple report templates • limit lines/frequency lists/correction tables
Characterization of signal paths and transducers	manual entry of transducer correction tables (e.g. transducer factors)
Measurement sequence/test control	interactive and automatic test execution of: • spectrum overview measurement, data reduction, final measurement • manual positioning of EUT • manual positioning of antenna (polarization/height) • automated switching of LISN lines (depending on receiver used) • automated 3-axes sequence for GTEM measurements • data reduction method (subrange maxima or peak excursion) • trigger custom actions or notifications before/during/after test • device simulation mode for preparation/validation of test templates
Data storage	• integrated database • data backup and restore • import and export function for test templates, device configuration and tables
Measurement result display	• tables and configurable traces with limit lines and markers
Reporting	• single test, multiple measurement report in PDF, DOCX format
User interface	• dashboard with configurable favorite items for quick access (test templates, tests, report templates, etc.) • keyword search function, search for frequencies, tags, standards, dates • touchscreen or mouse operation

Additional tools	• unit converter tool • migration tool for test templates from R&S®ES-SCAN • GTEM waveguide correlation algorithm (convert TEM specification to correction table) • configuration wizard to import predefined test templates and commonly used data
Supported devices	
Measurement receivers and spectrum analyzers	• R&S®EPL • R&S®ESCI • R&S®ESL • R&S®ESPI • R&S®ESR • R&S®ESRP • R&S®ESU • R&S®ESW • R&S®FPC (no user port for LISN control) • R&S®FPH (no user port for LISN control) • R&S®FPL • R&S®FSL • R&S®FSV • R&S®FSV3004, R&S®FSV3007, R&S®FSV3013, R&S®FSV3030, R&S®FSV3044, R&S®FSV3050 • R&S®FSVA3004, R&S®FSVA3007, R&S®FSVA3013, R&S®FSVA3030, R&S®FSVA3044, R&S®FSVA3050 • R&S®FSW • R&S®FSWT
LISN (remote control depends on receiver model)	• R&S®AMN6500 • R&S®ENV216 • R&S®ENV432 • R&S®ENV4200 • R&S®ESH2-Z5, R&S®ESH3-Z5 • R&S®HM6050-2 (optional USB-to-COM adapter required for remote control) [1]

R&S®ELEMS-C EMS test software for conducted susceptibility

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Software features	
Measurement environment	conducted measurements (BCI, CDN, EM-clamp), in line with commercial standards
Test setup	• hardware setup independent from test template − device list configuration − multiple report templates − frequency lists/correction tables • EUT specific grouping of test results
Characterization of signal paths, amplifiers and transducers	• calibration measurement for signal path (requires generator and power meter)
Measurement sequence/test control	• interactive (manual frequency stepping) and automatic test execution • automatic leveling of interferer signal (substitution, sensor, constant power) • device simulation mode for preparation/validation of test templates
Data storage	• integrated database • data backup and restore • import and export function for test templates, device configuration and tables
Measurement result display	• representation of data in tables and graphics with markers • open results from multiple tests for comparison
Reporting	• single test, multiple measurement report in PDF, DOCX format
EUT monitoring	• one monitoring channel • manual Go/NoGo entry by operator
User interface	• dashboard with configurable favorite items for quick access (EUTs, test templates, tests, report templates) • keyword search function, search for frequencies, tags, standards, dates • touchscreen or mouse operation
Additional tools	• unit converter tool • migration tool for test templates from R&S®EMC32 • configuration wizard to import predefined test templates and commonly used data • amplifier characterization measurement (1 dB, 2 dB, 3 dB compression point)

[1] The discontinued R&S®HM6050-2 line impedance stabilization network is supported by the R&S®ELEKTRA EMC test software.

Supported devices	
Signal generators	• R&S®SMA100A, R&S®SMA100B, R&S®SMB100A, R&S®SMB100B, R&S®SMC100A • R&S®SME, R&S®SMR, R&S®SMT, R&S®SMF100A, R&S®SML • R&S®HMF2525, R&S®HMF2550 • R&S®SGS100A
Vector signal generators	• R&S®SMCV100A, R&S®SGT100A (both with digital modulation) • R&S®SMBV100A, R&S®SMBV100B, R&S®SMM100A, R&S®SMW200A (only analog modulations)
Power meters	R&S®NRP2, R&S®NRX using below listed RF probes: • R&S®NRP6AN, R&S®NRP18AN via LAN, USB or R&S®NRX • R&S®NRP-Z11/-Z21/-Z51/-Z56/-Z57/-Z58/-Z61/-Z81/-Z85/-Z86/-Z91/-Z92/-Z98 • R&S®NRP-Z211/-Z221 • R&S®NRPxxT(N) • R&S®NRPM3 • R&S®NRVD • R&S®NRVS • R&S®NRP8/18/33/40/50/67S(N), R&S®18/40/50P, R&S®18S-10/20/25 • R&S®NRQ6
Amplifiers	• R&S®BBA100 • R&S®BBA130 • R&S®BBA150 • R&S®BBA300 • R&S®BBL200 • Amplifier Research AR (models on request) • Bonn (models on request)
Switch units	• R&S®OSP (models: R&S®OSP120, R&S®OSP130, R&S®OSP220, R&S®OSP230, R&S®OSP320) • generic switch unit
EUT monitoring	• generic monitoring single channel (1 measurement value) • R&S®AdVISE visual inspection software
Interlock	• generic interlock

R&S®ELEMS-R EMS test software for radiated susceptibility

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Software features	
Measurement environment	radiated measurements in SAC, FAR, OATS, TEM waveguide, in line with commercial standards
Test setup	• hardware setup independent from test template − device configuration − multiple report templates − frequency lists/correction tables • EUT specific grouping of test results
Characterization of signal paths, amplifiers and transducers	• calibration measurement for signal path (requires generator/power meter or network analyzer) • field uniformity measurement and evaluation algorithm, in line with commercial standards
Measurement sequence/test control	• interactive (manual frequency stepping) and automatic test execution • interactive, software control of antenna mast (polarization) and turntable • automatic leveling of interferer signal (substitution, sensor, constant power) • device simulation mode preparation/validation of test templates
Data storage	• integrated database • data backup and restore • import and export function for test templates, device configuration and tables
Measurement result display	• representation of data in tables and graphics with markers • open results from multiple tests for comparison
Reporting	• single test, multiple measurement report in PDF, DOCX format
EUT monitoring	• one monitoring channel • manual Go/NoGo entry by operator
User interface	• dashboard with configurable favorite items for quick access (EUTs, test templates, tests, report templates) • keyword search function, search for frequencies, tags, standards, dates • touchscreen or mouse operation

Additional tools	• unit converter tool • migration tool for test templates from R&S®EMC32 • configuration wizard to import predefined test templates and commonly used data • amplifier characterization measurement (1 dB, 2 dB, 3 dB compression point)
Supported devices	
Signal generators	• R&S®SMA100A, R&S®SMA100B, R&S®SMB100A, R&S®SMB100B, R&S®SMC100A • R&S®SME, R&S®SMR, R&S®SMT, R&S®SMF100A, R&S®SML • R&S®HMF2525, R&S®HMF2550 • R&S®SGS100A • R&S®SMW200A
Vector signal generators	• R&S®SMCV100A, R&S®SGT100A (both with digital modulation) • R&S®SMBV100A, R&S®SMBV100B, R&S®SMM100A, R&S®SMW200A (only analog modulations)
Power meters	• R&S®NRP2, R&S®NRX using below listed RF probes • R&S®NRP6AN, R&S®NRP18AN via LAN, USB or R&S®NRX • R&S®NRP-Z11/-Z21/-Z51/-Z56/-Z57/-Z58/-Z61/-Z81/-Z85/-Z86/-Z91/-Z92/-Z98 • R&S®NRP-Z211/-Z221 • R&S®NRPxxT(N) • R&S®NRPM3 • R&S®NRVD • R&S®NRVS • R&S®NRP8/18/33/40/50/67S(N), 18/40/50P, 18S-10/20/25 • R&S®NRQ6
Field probes	• AR FL700xx (4 channels) • ETS HI6005/6006/6022/6023/6053/6105/6122/6153 probes via serial FO interface • LUMILOOP LSProbe 1.2 (4 channels) • Narda EMC-300 • Narda EP600/601/602/603/604 probes via serial FO interface • Narda NBM-550 • Raditeq Radisense 10xx/20xx (single channel/4 channels) • ETS EMCenter, EMsense • Wavecontrol SMP2 • generic field probe • combined field probe
Amplifiers	• R&S®BBA100 • R&S®BBA130 • R&S®BBA150 • R&S®BBA300 • R&S®BBL200 • Amplifier Research AR (models on request) • Bonn (models on request) • CPI TWT amplifiers
Switch units	• R&S®OSP (models: R&S®OSP120, R&S®OSP130, R&S®OSP220, R&S®OSP230, R&S®OSP320) • generic switch unit
Turntables/masts	• Frankonia devices controlled by FC06 • Innco devices controlled by CO3000, CO2000, CO1000 • Maturo devices controlled by NCD, MCU and FCU • ETS devices controlled by EMCO 2090 (+ AUX ports), ETS EMControl • R&S®ATS1800, R&S®ATS1800C • generic turntable/antenna tower
EUT monitoring	• generic monitoring single channel (1 measurement value) • R&S®AdVISE visual inspection software
Interlock	• generic interlock

Base software extensions

R&S®ELEMI-A advanced EMI test software for conducted and radiated emissions

Prerequisites	R&S®ELEMI-E
Software features	
Test setup	hardware setup independent from test template: • device list can contain multiple receivers • magnetic field strength measurements with triple loop antenna for CISPR 15 • multiple EUTs can be configured, tests are assigned to 1 active EUT • detectors selection for each frequency subrange • multiple transducers with H and V polarization can be configured
Characterization of signal paths and transducers	• calibration measurement for signal path (requires generator and power meter) • individual transducer factors for all LISN lines • horizontal and vertical polarization correction table for one antenna • multiple transducers can be configured
Measurement sequence/test control	• interactive and automatic test execution of: overview measurement, data reduction, zoom (interactive only), final measurement • interactive, software control of antenna mast (height, polarization), turntable and slidebar • switch polarization manually • combined data reduction (subrange maxima and peak excursion)
Measurement result display	• display separate graphics per subrange or accessory loop position
Data management	• import and export function for test templates, device configuration and tables
Supported devices	
Switch units	• R&S®OSP (models: R&S®OSP120, R&S®OSP130, R&S®OSP220, R&S®OSP230, R&S®OSP320) • generic switch unit
Masts and turntables controllers	• Frankonia devices controlled by FC06 • Innco devices controlled by CO3000 (incl. tilt), CO2000, CO1000 • Maturo devices controlled by NCD (incl. tilt), MCU and FCU (incl. tilt) • ETS devices controlled by EMCO 2090 (+ AUX ports), ETS EMControl • R&S®ATS1800, R&S®ATS1800C • R&S®DST positioner • R&S®RSM • R&S®RST • manual turntable • generic turntable/antenna tower
Slidebars	• Innco slidebars controlled by CO3000 (incl. tilt), CO2000, CO1000 • Maturo slidebar controlled by NCD, MCU and FCU • manual slidebar • generic slidebar

R&S®ELEMI-S EMI system test software for conducted and radiated emissions

Prerequisites	R&S®ELEMI-A and R&S®ELEMI-E
Software features	
Test setup	• EUT specific test plan definition and data management • separate results for multiple EUT operating modes
Measurement sequence/test control	• interactive and fully automated sequence of measurement steps − overview measurement, data reduction, maximization, zoom, adjustment, final measurement − combined zoom, adjustment and final measurements for faster test execution • overview measurement with stepped or continuous movement (turntable) • simultaneous accessory movement and spiral scan − add custom frequency list to list of critical points − adjustment measurement with height scan and azimuth scan chart − automated zoom measurement before final measurement − interactive measurement of disturbance maxima • automated software control of antenna mast (height, polarization), turntable and slidebar • full automated test flow for a subrange to reduce number of antenna changes • extended methods for data reduction incl. external applications • pause and resume test flow • automatic 3-axes measurement for magnetic field antennas using turntable • gapless measurement with R&S®ESW • calibration measurements using network analyzer • decoupling measurements of high/low voltage systems using network analyzer • MIL-STD-461E/F/G, RE103 and CE106 harmonics measurement on transmitters with dynamic limit lines
Data management	• use shared database with up to 5 users • user and roles management
Measurement result display	• reporting as per GMW3097 requirement • polar and height scan graphical display • save a screenshot of the receiver in the test on demand
Reporting	• summary report containing marked tests per EUT
Supported devices	
Network analyzers	• R&S®ZNA, R&S®ZNB, R&S®ZND, R&S®ZVA, R&S®ZNH, R&S®ZNL, R&S®FPC, R&S®ZNLE
I/O devices	• ADAM60xx • bmcm USB-AD, USB-PIO • NI-DAQ (A/D acquisition card)

R&S®ELEMS-S EMS system test software for conducted and/or radiated susceptibility

Prerequisites	R&S®ELEMS-C or R&S®ELEMS-R
Software features	
Test setup	• EUT specific test plan definition and data management • automatic FU measurement with scanner device or multi-channel field probe • antenna with power meter can be used as field probe • network analyzer can be used for calibration setups • harmonics measurement of interference signals • use of supported oscilloscopes and receivers/spectrum analyzers as power meters [2]
Measurement sequence/test control	• automatic execution of measurement loops for EUT position (azimuth), antenna polarization and EUT operating state • separate results tables for measurement loop combinations • automated software control of antenna mast (polarization) and turntable • spectrum analyzer/EMI receiver can be used as frequency selective power meter • calibration measurements using network analyzer • digital modulation and arbitrary interference signals using a vector signal generator • automatic and interactive susceptibility mode in order to identify the NoGo interference level
Data management	• use shared database with up to 5 users • user and roles management
EUT monitoring	• multiple monitoring channel using a generic monitoring driver with automatic evaluation • manual Go/NoGo entry by operator • multiple channels with same unit can be displayed in one chart
Measurement result display	• optional worst-case analysis of each EUT monitoring channel • automated test verdict evaluation on test end • merge wizard for tables (maximum, minimum, average, custom formula) intersection or union of frequency ranges • video overlay: insertion of EMS data into visual inspection software such as R&S®AdVISE
Reporting	• summary report containing marked tests per EUT
Supported devices	
Field probe positioner	• Maturo FPP • generic field probe positioner
I/O devices	• ADAM60xx • bmcm USB-AD, USP-PIO • NI-DAQ (A/D acquisition card)
Network analyzers for calibration	R&S®ZNA, R&S®ZNB, R&S®ZND, R&S®ZVA, R&S®ZNH, R&S®ZNL, R&S®FPC

R&S®ELEMC-DRV generic drivers

Prerequisites	R&S®ELEMI-A or R&S®ELEMS-C or R&S®ELEMS-R
Software features	
Test setup	• connect to SCPI compliant instruments using a user configurable command set • import and export of command set via XML files
Device classes supported	• amplifier, RF generator, power meter • generic I/O device (only with R&S®ELEMS-S or R&S®ELEMI-S) • RF generator modulations limited to analog modulations (CW, AM, PULM)

R&S®ELEMC-REP extended reporting

Prerequisites	R&S®ELEMI-A or R&S®ELEMS-C or R&S®ELEMS-R or R&S®ELEMC-OFF9
Software features	
Reporting	• create report templates directly in Word or other compatible editors by copying XML code from R&S®ELEKTRA as a place holder into the DOTX (or compatible) file • create sub-report templates to allow adaption to measurement type • greater flexibility regarding contents and formatting when creating reports compared to the standard R&S®ELEKTRA reporting

[2] Only with R&S®ELEMS-SCP.

R&S®ELEMS-SCP oscilloscope drivers

Prerequisites	R&S®ELEMS-C or R&S®ELEMS-R
Software features	
Test setup	• specific drivers with settings GUI for R&S®RTA, R&S®RTC, R&S®RTE, R&S®RTM, R&S®RTO, R&S®RTP • mask evaluation with R&S®RTO • usage as EUT monitoring device for EUT NoGo detection • measurement of signal parameters like level, frequency, etc. • generic oscilloscope driver for third party oscilloscopes
Device classes supported	oscilloscopes for EUT monitoring and measurement

R&S®ELEMI-3D 3D evaluation

Prerequisites	R&S®ELEMI-S, R&S®ELEMI-A and R&S®ELEMI-E or R&S®ELEMC-OFF9
Software features	
Measurement result display	• maximization data for all measured frequencies available for 3D view and 2D heatmap • cylindrical and spherical display of data • interactive change of colors scheme and viewing angle (3D view) • snapshot of display can be integrated in report • spectrum over azimuth display (for cylindrical measurements only)

R&S®ELEMI-RSE radiated spurious emission measurement

Prerequisites	R&S®ELEMI-S, R&S®ELEMI-A and R&S®ELEMI-E
Software features	
Test setup	• hardware setup test in FAR including radio communication tester and elevation positioner • calibration of receiving antenna correction factors • RSE specific results and parameters are available in the report • RF generator and TX antenna for substitution method
Measurement sequence/test control	• measurement loop for elevation • measurement loop for EUT specific parameters • substitution method as final step
Supported devices	
Turntables/masts	R&S®ATS1800C, support of tilt function of Innco and Maturo masts

R&S®ELEMI-OOB EMI out of band measurements

Prerequisites	R&S®ELEMI-RSE
Software features	
Measurement sequence/test control	TX burst trigger for RSE final measurement, in line with ETSI EN 300328, ETSI EN 301893 and ETSI 302502

R&S®ELEMI-MBM multiband measurements

Prerequisites	R&S®ELEMI-S, R&S®ELEMI-A and R&S®ELEMI-E
Software features	
Measurement sequence/test control	• measure up to 4 frequency bands (test subranges) in the overview measurement simultaneously using 4 receivers and 4 antennas to speed up EMI or RSE testing • measure H and V polarization simultaneously with 2 receivers and antennas

R&S®ELEMC-5GS 5G signaling for R&S®CMX500

Prerequisites	R&S®ELEMI-RSE or R&S®ELEMS-S
Software features	
Measurement sequence/test control	• control 5G communications signaling FR1 or FR2 link on start and end of test • check communications link during test • custom TDD slot scheduling, useful for faster RSE measurements • support for resource block assignment and modulation scheme (RMC) • TDD switching for FR2 TDD connections (only 1 remote radio head necessary) • support for VoLTE (NSA) and VoNR (SA) • support for CSWL (2G/3G/4G/ Bluetooth®/Bluetooth® LE and Wi-Fi®)
Supported device classes	
Radio communication testers	• R&S®CMX500 (two boxes with R&S®CMW500) with signaling options (FR1 and FR2) (refer to release note for required firmware version) • R&S®CMX500 one box with signaling options (FR1 and FR2)
EUT monitoring	perform 5G BLER measurement during EMS test

R&S®ELEMI-5GFC 5G RSE measurement, in line with FCC regulations

Prerequisites	R&S®ELEMI-RSE, R&S®ELEMI-3D recommended
Software features	
Measurement sequence/test control	• support of FCC 5G measurement procedure for measurement of mmWave radiated spurious emission • control of antenna positioner for measuring the full mmWave range from 40 GHz to 220 GHz fully automated • determination of the maximum radiation also for polarization +45°/+135° where 0° is horizontal and 90° is vertical • automated measurement of sphere cuts in X and Y axis layer; optional measurement of Z axis layer and calculation of TRP value • optional measurement of full TRP value over the full sphere
Supported devices classes	
Power meters	Erickson PM5
Positioner	Maturo EAP

R&S®ELEMC-WRLS EMC extension for wireless signaling

Prerequisites	R&S®ELEMI-RSE or R&S®ELEMS-S
Software features	• control communications signaling link on start and end of test • EUT monitoring (BER/PER) and EUT control for WLAN and Bluetooth® with radio communication tester during RSE/EMC tests
Supported device classes	
Radio communication testers	R&S®CMW500, R&S®CMW270

R&S®ELEMC-CELS EMC extension for cellular signaling

Prerequisites	R&S®ELEMI-RSE or R&S®ELEMS-S
Software features	• control communications signaling link on start and end of test • EUT monitoring (BER) and EUT control for 2G, 3G and LTE with radio communication tester during RSE/EMC tests
Supported device classes	
Radio communication testers	R&S®CMW500 (R&S®CMW270)

R&S®ELEMS-AMEX automotive and military EMS measurement

Prerequisites	R&S®ELEMS-C or R&S®ELEMS-R
Software features	
Test setup	• configure third TEM cell output power meter • power limitation with reference calibration table and offset • use oscilloscopes as power meters
Measurement sequence/test control	• immunity tests, in line with common automotive and military EMS standards • leveling on a transducer formula, net power, mid power • immunity level profiles including key on/off sequence • configurable modulations: CW, AM, FM, pulse, AM + pulse • pulse and pulse train modulation incl. GMW radar test • automatic loop for modulations when used with R&S®ELEMS-S • leveling with modulation on • system monitoring incl. system impedance and user evaluation formula • supports ISO 11452-8, MIL-STD-461E/F/G, RS101 magnetic field tests • supports ISO 7637-4 test pulse A with R&S®HMF2550 arbitrary function generator • power measurement based on U and I on LF tests using 2 channel scope
Supported device classes	
RF generator	• R&S®SMx pulse train option (-K27) • digital modulation with vector signal generators using ARB waveform files
EUT monitoring	R&S®EMCAN64 middleware software to interface with Vector CANoe and Vector CANalyzer software

R&S®ELEMS-RVC rotating tuner reverberation chamber measurements

Prerequisites	R&S®ELEMS-R and R&S®ELEMS-S
Software features	
Test setup	• EMS radiated setup with single tuner device (using turntable driver) • parallel usage of field probe and receiving antenna for calibration • manual field probe / receiving antenna positioning during chamber calibration
Measurement sequence/test control	• supported immunity tests according to standards EN 61000-4-21:2011 (annex B, D), ISO 11452-11:2010 with stepped tuner mode • support for unloaded/loaded chamber calibration with required measurement evaluation with defined sensor positions in the test volume • support for DUT check with comparison of loading to chamber calibration • support for DUT test with qualification or susceptibility method • parallel measurement of field strength and received power • automatic loop for modulations when used with R&S®ELEMS-S • RVC test level methods using RVC normalized max. E-field table • tuner loop with individual settings per frequency range • reporting of chamber calibration results
Supported device classes	
Turntables	• tuners controlled by turntable controller listed in R&S®ELEMI-A and R&S®ELEMS-R • COMTEST tuner based on Oriental controller

R&S®ELEMS-ABT audio breakthrough measurements

Prerequisites	R&S®ELEMI-C or R&S®ELEMS-R
Software features	• audio breakthrough calibration, in line with ETSI 301 489-52 • audio breakthrough EMS test with optional NB/BB evaluation, in line with ETSI 301 489-52 for cellular technologies such as 2G, 3G, 4G, 5G • VoNR for 5G with R&S®CMX only with external audio analyzer and R&S®CMX-ZG180A • analog audio measurement, in line with CISPR 35 using audio analyzer
Supported device classes	
Audio analyzers	• R&S®CMW500 audio board • R&S®UPP • R&S®UPV • MCD audio analyzer (without integrated PC) and toolmonitor software • Audio Precision APx517 • Standford Research SR1+

R&S®ELEMS-C345 MIL-STD-461, CS103/CS104/CS105

Prerequisites	R&S®ELEMI-C and R&S®ELEMS-AMEX
Software features	• support of MIL-STD-461E/F/G on receiver ports as per sections CS103, CS104, CS105 • support for primary, secondary and EUT stimulus generator

R&S®ELEMS-AIM EMS waveform management software for AIM 7351731 standard

Prerequisites	R&S®ELEMS-C or R&S®ELEMS-R
Software features	
	• support for testing medical devices, in line with AIM 7351731 standard • waveforms provided for all parts of the AIM 7351731 standard − 14223 type A (annex A) − 14443-3 type A (annex B) − 14443-4 type B (annex C) − 15693 STAY QUIET (annex D) − 18000-3 mode 3 − 18000-7 (annex E) − 18000-63 DSB-ASK (annex F) − 18000-63 PR-ASK (annex F) − 18000-4 mode 1 (annex G)
Supported device classes	
RF generators	• R&S®SMBV100A with options − R&S®SMBVB-B10 or -B51 (baseband generator with ARB) and -K521 • R&S®SMBV100B with options − R&S®SMBVB-B103 (8 kHz to 3 GHz) • R&S®SMM100A with options − R&S®SMM-B9 (baseband generator with ARB) • R&S®SMW200A with options − R&S®SMW-B103 (frequency 100 kHz to 3 GHz) − R&S®SMW-B10 (standard baseband generator)

R&S®ELEMC-OFF9 EMC base software for offline pre/postprocessing

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Software features	• used for workplaces that do not connect to real instruments to perform measurements but instead are used for pre/postprocessing and data handling (import/export) tasks • functionality comparable with the following products (with the exception mentioned above) − R&S®ELEMI-EAS, R&S®ELEMI-RSE, R&S®ELEMI-MBM, R&S®ELEMI-5GFC − R&S®ELEMS-CRS, R&S®ELEMS-AMEX − R&S®ELEMC-DRV, R&S®ELEMC-SCP, R&S®ELEMC-5GS • the following options can be added − R&S®ELEMC-REP − R&S®ELEMI-3D − R&S®ELEMS-AIM − ELEMC-DEX − ELEMC-EDB

R&S®ELEMC-TLA EMC test list automation

Prerequisites	R&S®ELEMI-S or R&S®ELEMS-S
Software features	• automatic execution of selected tests within a predefined test plan • test control during measurement such as start/stop and resume • log file creation of test sequence • run custom actions before or after each test step

R&S®ELEMC-DEX data exchange interface

Prerequisites	R&S®ELEMI-A or R&S®ELEMS-R or R&S®ELEMS-C or R&S®ELEMC-OFF9
Software features	• REST API to transfer R&S®ELEKTRA report data into third-party applications • supports create, read, update, and delete operations for R&S®ELEKTRA entities

R&S®ELEMC-REM remote control interface

Prerequisites	R&S®ELEMI-A or R&S®ELEMS-C or R&S®ELEMS-R
Software features	• remote control of ELEKTRA from an external application • commands to create, start, pause, resume and save a test • fetch live measurement results • REST API interface

R&S®ELEMC-EDB enhanced data base

Prerequisites	R&S®ELEMI-A or R&S®ELEMS-C or R&S®ELEMS-R or R&S®ELEMC-OFF9
Software features	extend concurrent use of central data base for up to 20 users

R&S®ELEMC-ATB EUT test bench control

Prerequisites	R&S®ELEMI-S or R&S®ELEMS-S (R&S®ELEMS-AMEX, R&S®ELEMC-DEX or R&S®ELEMC-REM recommended)
Software features	• device drivers for EUT monitoring and EMI accessory control with test bench system (e-motor test bench) • test flow synchronization with test bench for EMS and EMI tests • data synchronization between test bench software and R&S®ELEKTRA EMC test software (tables, graphics) • EMI overview measurement on a complete test bench test cycle with finding the maximum emission by varying selected test bench parameters like speed, torque, operation mode of the e-motor • EMS test with keeping the worst-case deviation for all active parameters during the full dwell time
Supported device classes	
Test bench driver	• EUT monitoring: AVL interface driver for EMS • accessories control: AVL test bench driver for EMI • AVL®PUMA/Concerto test bench control software required

Additional tools included in base software packages

Test setup	migration wizard for auto tests from R&S®EMC32
Measurement result display	merge wizard for tables (maximum, minimum, average, custom formula) intersection or union of frequency ranges

Software bundles

R&S®ELEMI-EA software bundle containing R&S®ELEMI-E and R&S®ELEMI-A

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Key features	see details of R&S®ELEMI-E and R&S®ELEMI-A

R&S®ELEMI-AS software bundle containing R&S®ELEMI-A and R&S®ELEMI-S

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements) and R&S®ELEMI-E
Key features	see details of R&S®ELEMI-A and R&S®ELEMI-S

R&S®ELEMI-EAS software bundle containing R&S®ELEMI-E, R&S®ELEMI-A and R&S®ELEMI-S

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Key features	see details of R&S®ELEMI-E, R&S®ELEMI-A and R&S®ELEMI-S

R&S®ELEMS-CS software bundle containing R&S®ELEMS-C and R&S®ELEMS-S

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Key features	see details of R&S®ELEMS-C and R&S®ELEMS-S

R&S®ELEMS-RS software bundle containing R&S®ELEMS-R and R&S®ELEMS-S

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Key features	see details of R&S®ELEMS-R and R&S®ELEMS-S

R&S®ELEMS-CRS software bundle containing R&S®ELEMS-C, R&S®ELEMS-R and R&S®ELEMS-S

Prerequisites	R&S®EMCPC license dongle and system requirements (see Minimum system requirements)
Key features	see details of R&S®ELEMS-C, R&S®ELEMS-R and R&S®ELEMS-S

Software update service for R&S®ELEKTRA software

R&S®ELEMI-E

No software update service required for R&S®ELEMI-E.

All other R&S®ELEMI, R&S®ELEMS, R&S®ELEMC software licenses

Software upgrade options for R&S®ELEKTRA software (required from version 3.10).

Prerequisites	license for the respective software product
Key features	• 1 year software update service in order to run later versions of the R&S®ELEKTRA software (including enhancements and additional functionality), than the available version at the time of purchase of the respective license • software update service is provided as a key code for the R&S®EMCPC license card • without software update service, only the purchased version and minor versions, if available, with corrections can be used • installing a new software version with only a part of the software update service results in deactivation of functions in new software versions, because of software dependencies • other validity periods than 1 year are available on request • the software update service is not required within the warranty period of 1 year after purchase of the software license

Ordering information

Designation	Type	Order No.
Hardware		
License dongle	R&S®EMCPC	5601.0018.02
Software		
Essential EMI test software, for conducted and radiated emissions	R&S®ELEMI-E	5601.0030.02
Advanced EMI test software, for conducted and radiated emissions	R&S®ELEMI-A	5601.0053.02
EMI system test software, for conducted and radiated emissions	R&S®ELEMI-S	5601.0076.02
EMS test software, for conducted susceptibility	R&S®ELEMS-C	5601.0099.02
EMS test software, for radiated susceptibility	R&S®ELEMS-R	5601.0118.02
EMS system test software, for conducted and/or radiated susceptibility	R&S®ELEMS-S	5601.0130.02
Generic drivers	R&S®ELEMC-DRV	5601.0230.02
EMC extension to report generation	R&S®ELEMC-REP	5601.0460.02
Oscilloscope drivers (monitoring)	R&S®ELEMC-SCP	5601.0630.02
Radiated spurious emission measurement	R&S®ELEMI-RSE	5601.0253.02
EMI extension to multiband (multi receiver) measurement	R&S®ELEMI-MBM	5601.0676.02
3D evaluation	R&S®ELEMI-3D	5601.0260.02
5G signaling, for R&S®CMX500	R&S®ELEMC-5GS	5601.0276.02
RSE 5G measurement, in line with FCC regulations	R&S®ELEMI-5GFC	5601.0682.02
EMS test software, for automotive and military standards	R&S®ELEMS-AMEX	5601.0353.02
EMS waveform management software, for AIM 7351731 standard	R&S®ELEMS-AIM	5601.0582.02
EMC base software, for offline pre/postprocessing	R&S®ELEMC-OFF9	5601.0599.02
EMC extension, for wireless signaling	R&S®ELEMS-WRLS	5601.0701.02
EMC extension, for cellular signaling	R&S®ELEMS-CELS	5601.0699.02
Data exchange interface	R&S®ELEMC-DEX	5601.0547.02
EMC test list automation	R&S®ELEMC-TLA	5601.0560.02
EMI out-of-band measurements	R&S®ELEMC-OOB	5601.0724.02
Enhanced data base	R&S®ELEMC-EDB	5601.0530.02
EMS extension audio breakthrough	R&S®ELEMS-ABT	5601.0730.02
EMS extension, for MIL-STD 461, CS103/CS104/CS105	R&S®ELEMS-C345	5601.0576.02
EMC extension, for remote control interface	R&S®ELEMC-REM	5601.0553.02
EMC extension, for EUT test bench control	R&S®ELEMC-ATB	5601.2340.02
EMS extension, for rotating tuner reverberation chamber	R&S®ELEMS-RVC	5601.2410.02
Software bundles		
EMI advanced test software package	R&S®ELEMI-EA	5601.0424.02
EMI system test software package	R&S®ELEMI-EAS	5601.0382.02
EMI system test software extension package	R&S®ELEMI-AS	5601.0518.02
EMS system test software package conducted	R&S®ELEMS-CS	5601.0447.02
EMS system test software package radiated	R&S®ELEMS-RS	5601.0360.02
EMS system test software package conducted and radiated	R&S®ELEMS-CRS	5601.0401.02

Designation	Type	Order No.
Software maintenance (required from version 3.10)		
1 year software maintenance	R&S®ELEMI-A	5601.0053.81
1 year software maintenance	R&S®ELEMI-S	5601.0076.81
1 year software maintenance	R&S®ELEMS-C	5601.0099.81
1 year software maintenance	R&S®ELEMS-R	5601.0118.81
1 year software maintenance	R&S®ELEMS-S	5601.0130.81
1 year software maintenance	R&S®ELEMC-DRV	5601.0230.81
1 year software maintenance	R&S®ELEMC-REP	5601.0460.81
1 year software maintenance	R&S®ELEMC-SCP	5601.0630.81
1 year software maintenance	R&S®ELEMI-RSE	5601.0253.81
1 year software maintenance	R&S®ELEMI-MBM	5601.0676.81
1 year software maintenance	R&S®ELEMI-3D	5601.0260.81
1 year software maintenance	R&S®ELEMS-5GS	5601.0276.81
1 year software maintenance	R&S®ELEMI-5GFC	5601.0682.81
1 year software maintenance	R&S®ELEMS-AMEX	5601.0353.81
1 year software maintenance	R&S®ELEMS-AIM	5601.0582.81
1 year software maintenance	R&S®ELEMC-OFF9	5601.0599.81
1 year software maintenance	R&S®ELEMS-WRLS	5601.0701.81
1 year software maintenance	R&S®ELEMS-CELS	5601.0699.81
1 year software maintenance	R&S®ELEMC-DEX	5601.0547.81
1 year software maintenance	R&S®ELEMC-TLA	5601.0560.81
1 year software maintenance	R&S®ELEMC-OOB	5601.0724.81
1 year software maintenance	R&S®ELEMC-EDB	5601.0530.81
1 year software maintenance	R&S®ELEMS-ABT	5601.0730.81
1 year software maintenance	R&S®ELEMS-C345	5601.0576.81
1 year software maintenance	R&S®ELEMC-REM	5601.0553.81
1 year software maintenance	R&S®ELEMC-ATB	5601.2327.81
1 year software maintenance	R&S®ELEMS-RVC	5601.2427.81

Service at Rohde&Schwarz
You're in great hands

- ► Worldwide
- ► Local and personalized
- ► Customized and flexible
- ► Uncompromising quality
- ► Long-term dependability

Rohde&Schwarz

The Rohde&Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test&measurement, technology systems and networks&cybersecurity. Founded more than 85 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

www.rohde-schwarz.com

Sustainable product design

- ► Environmental compatibility and eco-footprint
- ► Energy efficiency and low emissions
- ► Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

Rohde&Schwarz training
www.training.rohde-schwarz.com

Rohde&Schwarz customer support
www.rohde-schwarz.com/support

PD 5216.3695.22 | Version 13.00 | June 2023 (st)
R&S®ELEKTRA EMC Test Software
Data without tolerance limits is not binding | Subject to change

5216369522
5216.3695.22 13.00 PDP/PDW 1 en