### R&S®ELEKTRA EMC TEST SOFTWARE

# Swift and reliable measurements of electromagnetic disturbances



Product Brochure Version 03.00

#### **ROHDE&SCHWARZ**

Make ideas real



## AT A GLANCE

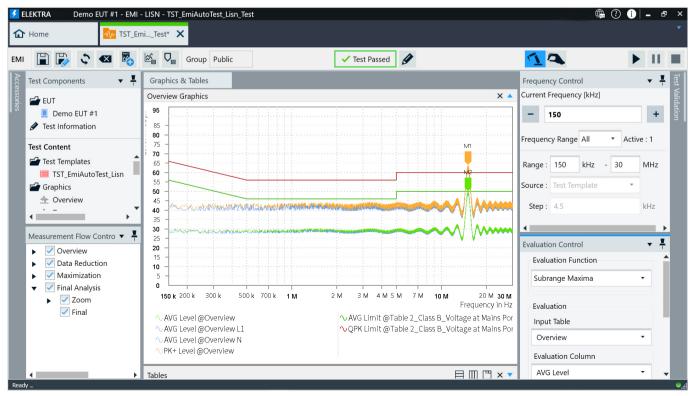
The R&S®ELEKTRA EMC test software can be used to control complete EMC test systems to perform automated or interactive electromagnetic interference (EMI) and electromagnetic susceptibility (EMS) measurements on equipment under test (EUT) to verify compliance with relevant standards.

New, reliable and highly efficient automatic and interactive test procedures deliver accurate results and allow in-depth analysis of EMI and EMS measurements during development and certification. At the same time, they speed up these processes.

R&S®ELEKTRA features a predefined software library that covers all common EMC standards – including relevant limit lines, test setups and transducer factors – to simplify test configuration and enable users to start testing faster. Users can create EUT-specific test plans with multiple tests and configure test templates, hardware setups and report templates. The dashboard-style, all-in-one-page user interface provides quick and easy access to everydesired function and parameter. Favorite items and tagging and search functions enhance usability and make it easy to navigate through the huge amount of data created during EMC testing.

EUT-centric planning, execution and documentation of test runs enables users to maintain an overview. Test setups, measurement procedures and reports can be tailored to user's requirements for tests that differ from the standards. R&S®ELEKTRA has an open interface that supports a wide variety of instruments and system components, including third-party equipment.

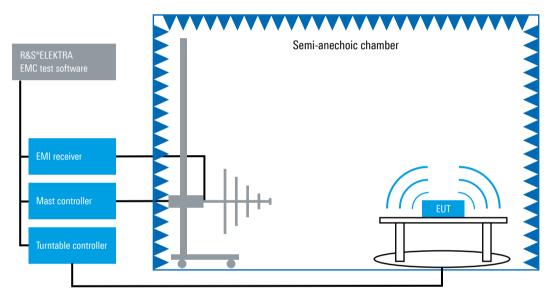
#### Automated EMI measurement with R&S®ELEKTRA.



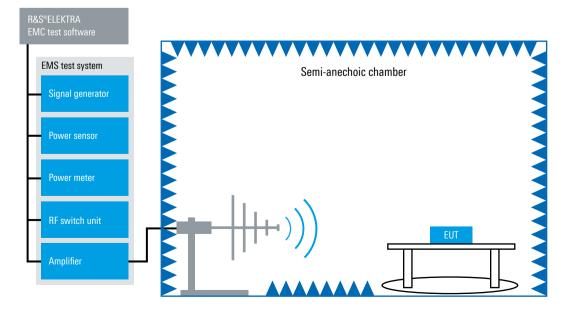
### **KEY FACTS**

- Can be used to create test plans with multiple tests for easy management of EUTs
- ► Intuitive, interactive and automated EMC measurements
- Covers most common EMC standards with predefined settings/templates
- ► Efficient result analysis and reporting
- Scalable and flexible platform from small systems for R&D debugging to multi-site EMC certification labs

#### Radiated emissions (RE) test setup



#### Radiated susceptibility (RS) test setup



### **INTUITIVE USER INTERFACE**



The intuitive user interface is simple to use and makes navigation easy.

#### Sleek, fast and modern

R&S<sup>®</sup>ELEKTRA comes with a revolutionary user interface (UI) that makes it future-ready. The sleek, fast and modern UI has a large, scalable, high-resolution and high-contrast display that supports touchscreen devices.

#### **Favorites dashboard**

Frequently used elements such as EUT test plans, hardware setups, test templates, test results and reports can be "pinned" to the dashboard for quick and convenient access.

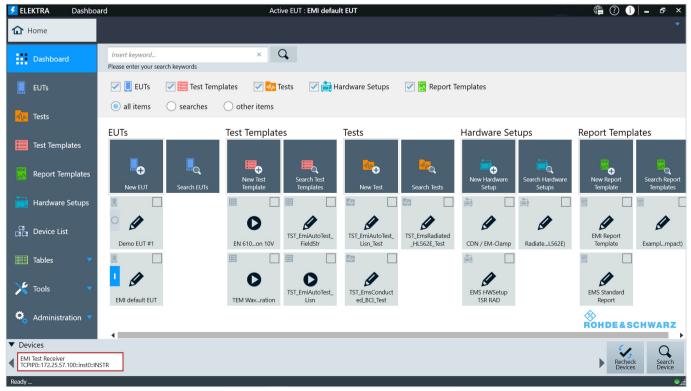
#### Tagging, filtering and searching

Quickly find key elements by entering keywords in the integrated search column. Apply user-defined tags to organize and classify your elements. Use filters to narrow down search results by frequency range or measurement category.

#### All-in-one-page user interface

R&S<sup>®</sup>ELEKTRA introduces an all-in-one-page user interface that eliminates the need for window hopping. The all-in-one-page design makes test configuration easy as it provides quick access to all functions and parameters needed to generate user-defined tests. Users can open multiple tests in multiple windows to view and compare data.

#### R&S®ELEKTRA user interface with multiple favorite items "pinned" to the dashboard for one-click access.



🗲 ELEKTRA	Dashbo	ard		Active E	UT	: EMI default EUT									_ 🌐 🕐 🚺	-	ъ×
🔂 Home																	
Dashboar	ď	<ul><li>Filters and Tags</li><li>Frequency Range</li></ul>		200 KHz EMS BCI Please enter your search keywo	ords	× 3 items found.	Q	T				<b>T</b>	•				
EUTs		30 MHz to 1 GHz	C	Name		Frequency Range	M	R	User	C				Details			
		150 kHz to 30 MHz		BCI EN 61000-4-6		150 kHz to 80 MHz	EMS		EN610 00-4-6	4/	×	Ø	Ē	3 items			
🐠 Tests		9 kHz to 150 KHz							;BCI	<i>с 1</i>		•		5 101113			
📕 Test Temp	lator	<ul> <li>Measurement Class</li> </ul>		_		150 kHz to 80 MHz	EMS			6/	×	Ø					
iest leinp	nates	EMS		EMS HWSetup 2SR E	ICI	150 kHz to 90 MHz	EMS			6/	Ma	Ø	Ē				
📈 Report Te	mplates	▼ Tags															
-		BCI															
Hardware	Setups	EN61000-4-6															
Device Lis	st																
Tables																	
🔀 Tools																	
🌣 Administr	ation 🔻		Ţ	Ð													
<ul> <li>Devices</li> </ul>															5		Q
EMI Test Receiver TCPIP0::172.25.57	7.100::inst0::IN	ISTR													Rechect	c i	Search Device
Poady																	

Powerful search function combines searches in different categories with specific filters and tags.

#### EMI autotest template. Hardware setups and configurations can be viewed and changed directly on the all-in-one-page interface.

🗲 ELEKTRA EN 55011	kd 3m QP Group 1 Class B Active EUT : EMI default EUT 🚔 🕐 🚺	) – a ×
🔂 Home	N 5501ass B" 🗙	
📔 🦻 🜔 EMI - Ek	Field Strength	
<ul> <li>Measurement Flow</li> </ul>		*
Overview Measurement	the overview of the set of the se	
Flow Details - Overvie Measurement Settings Detectors Maximum f Repeat Measurement		↑ ↓
Active	rncy Range Meas. BW (Overview) Hardware Setup Use individual Limit Lines Comment	т 🗸
- <u>-</u> ▼ ☑ :	z - 1 GHz 120 kHz EMI Electric Field Strength - Broadi 🔔 EN 55011 E Field 3m QP Group 🛛 🚊	
M     M	Select Device (Options)  Stroadband Antenna  Keteros  Keteros  Stroadband Antenna  Keteros	
Settings (Overview) Op (30 MHz - 6 GHz)	g Mode O Test Receiver Spectrum Analyzer Input Selection 1 DC	•

## **GET STARTED QUICKLY**

R&S®ELEKTRA improves usability for new and existing users of EMC test software with a predefined library for all common EMC standards, EUT-centric test plans, automatic detection of connected instruments and automated field uniformity evaluation for EMS measurements.

Standard	EMI	EMS		
CISPR11	supported	not applicable		
CISPR14	supported	supported		
CISPR 15	supported	not applicable		
CISPR32	supported	not applicable		
CISPR35	not applicable	supported		
IEC 61000-4-3	not applicable	supported		
IEC 61000-4-6	not applicable	supported		
CISPR12	supported	not applicable		
CISPR 25	supported	not applicable		
ISO 11451	not applicable	supported		
ISO 11452	not applicable	supported		
MIL-STD-461	supported	supported		
ETSI/FCC wireless	supported	supported		
<b>E 1 1 1 1 1 1 1</b>				

For more detailed information relating to the supported standards, contact your local Rohde&Schwarz sales office.

### Large library of predefined test setups for common EMC standards

A large library can be easily created using the configuration wizard that provides predefined test setups in accordance with common EMC standards. These test setups enable new and existing users to instantaneously perform tests with minimal preparation.

#### EUT-centric test plan management

The increasing complexity of EUTs results in the need to meet multiple, different requirements from diverse EMC standards. R&S<sup>®</sup>ELEKTRA gives users the ability to build and manage a test plan around a specific EUT. This prevents users from missing a test and helps generate a comprehensive report.

#### Automatic detection of connected instruments

R&S<sup>®</sup>ELEKTRA accelerates the hardware configuration process by automatically detecting connected instruments available for testing.

#### Configuration wizard with a library of multiple predefined test setups.

🗲 ELEKTRA Dashboar	rd Active EUT : EMI default EUT	🌐 ? 🚺 🗕 🗗 🗙
🔂 Home		*
مرابعہ Tests	Restart A Back Next Finish & Execute	
Test Templates	Please select the data to be created	
Report Templates	<ul> <li>Conducted Emissions Testing: Templates and Limits</li> <li>Image: EN 55011 Commercial</li> </ul>	^
뻱 Hardware Setups	<ul> <li>EN 55014 Commercial</li> <li>EN 55015 Commercial</li> </ul>	
Device List	<ul> <li>EN 55022 Commercial</li> <li>FCC Part 15 Commercial</li> </ul>	
Tables 🔻	<ul> <li>EN 55025 Automotive</li> <li>MIL-STD-461 / RTCA-DO160 Military / Avionic</li> </ul>	
🔀 Tools 🔺	<ul> <li>✓ Image: MILSID-4017 ACA-DOTION MILLARY AVIANCE</li> <li>✓ ✓ Commercial Limits</li> <li>✓ ✓ Automotive Limits</li> </ul>	
Export	<ul> <li>Automotive Limits</li> <li>Military / Avionic Limits</li> <li>Radiated Emissions Testing: Templates and Limits</li> </ul>	
C+ Import	▼ 📝 🧮 EN 55011 Commercial	
Configuration Wizard	<ul> <li>EN 55014 Commercial</li> <li>EN 55015 Commercial</li> </ul>	_
Unit Converter	Description     Test Templates and Limit Lines for radiated emissions testing	•
▲ Devices Ready		•

ELEKTRA Demo EUT #1		A	ctive EUT :	EMI default I	EUT			🌐 🕄 🚺 🗕 🖻
• Home Demo E	JT #1 🗙							
Group Public	•							
Name Demo EUT	1 Active							
est Plan General Information								
Insert keyword Please enter your search keywords	×Q	All				•		
📃 📘 🕞 Test Step		Date	State					Edit this Test Step
▼ EMI - Electric Field Streng	h 1 item(s)						Test Category	EMI - Electric Field Strength
TST_EmiAutoTest_Fie	dStr_Test				0		Test Name	TST_EmiAutoTest_FieldStr_Test
▼ EMI - LISN 1 item(s)							Test Template	TST_EmiAutoTest_FieldStr
TST_EmiAutoTest_Lis	n_Test	7/13/20	× .	<b>4</b>		≥ 💼	Test template	
▼ EMS - Bulk Current Injecti	on 1 item(s)						Limit Line	Table 6_Class B_Radiated E 🛛 🛛
TST_EmsConducted_	3CI_Test	7/13/20	1	<b>4</b>	≪ 6	≥ ≣	Report Template	<none></none>
▼ EMS - Anechoic Chamber	1 item(s)							
TST_EmsRadiated_H	562E_Test	7/13/20	~	₽₽	≪ 6	≥ 亩	Test Information	
						_		Add Information ↑ ↓
							Title	Content

EUT test plan including different subtests.

#### Device list showing all test equipment and device configurations.

ELEKTRA Home		Active EUT : EMI d	efault EUT				🛱 🕐 🕦	- 0
🔓 Home	🔚 EN 550 1 GHz 🗙 🐹 EMI Repate (1) 🗙 💀 E	N 5501Test* 🗙 📄 BCI EN00-4-6 🗙						
Dashboard	Insert keyword × Q			the search results might not be complete. evices' to see unsaved devices.			۵,	×
EUTs	🖬 🖻 Name	🔶 Туре	Interface	Address	Connection	Permanent	Function	s
	Generator     RF Generator	SMB100A	TCP/IP	TCPIP0::0.0.0.:inst0::INSTR	43		×PI	<b>n</b> 2:
🗤 Tests	▼ LISN	SMDTUUA	TCP/IP	TCPIPUCUUCUCIIIISTOCINIST R				
Test Templates	Mains LISN	ENV 432	Remote-controlle	ed	43		* 🗈 i	· 말
Report Templates	General Details Measurement Correction Functional C	heck						
	Connection Point	LISN Connector LISN						
Hardware Setups	Cable	еееееееееееееееееееееееееееееее						
Device List								
~~	Cable Correction	LISN Correction						
Tables 🔻	Fixed Value     0     dB	Fixed Correction	0 dBµV					
Tools 🛛 🔻	According to Attenuation Correction Table	According to Transducer Correction Table	N ENV432					
🖏 Administration 🔻	Example RF Cable (1)	1	L1 ENV432					
			L2 ENV432					
		1	L3 ENV432					
	Monitoring     Positioner							
	Power Meter							
	▼ Receiver							
	EMI Test Receiver	ESRP7 Receiver	TCP/IP	TCPIP0::0.0.0.0::inst0::INSTR	43		★ 🖺 i	<b>ت</b> ۲
	Receiver 0	ESR3 Receiver	TCP/IP	TCPIP0::170.152.99.101::inst0::INSTR	43		🗙 🖳 i	<u></u> 같 :
	Receiver 1	ESR26 Receiver	TCP/IP	TCPIP0::0.0.0.0::inst0::INSTR	43		🛨 🖳 j	<u>ا</u> 11
	► Ø Receiver 2	ESW8 Receiver	TCP/IP	TCPIP0::0.0.0.0:inst0::INSTR	43		🗙 🖳 i	<b>ت</b> 12
	<ul> <li>Receiver 3</li> </ul>	ESW26 Receiver	TCP/IP	TCPIP0::0.0.0.0::inst0::INSTR	4:0-		$\star$ R i	💼 🖻
Devices	-						4	Q
							Recheck Devices	Search Device

### **INCREASE YOUR TEST THROUGHPUT**

R&S<sup>®</sup>ELEKTRA is designed for compatibility with powerful EMC test equipment to boost testing speed with automated test execution.

#### Automated test execution

R&S<sup>®</sup>ELEKTRA provides automated test execution by controlling and monitoring the instruments used. Automated test execution and interactive testing can be toggled to enable in-depth debugging. Users can simulate and validate test configurations and procedures prior to the actual test to ensure that hardware resources be used efficiently.

#### Parallel interactive and automated operation

R&S®ELEKTRA increases productivity as it allows interactive operation, e.g. configuring tests and generating report templates, in parallel with automated test execution. Multiple windows can be opened on the same screen, enabling users to compare different test runs.

#### Use the full performance of your receivers

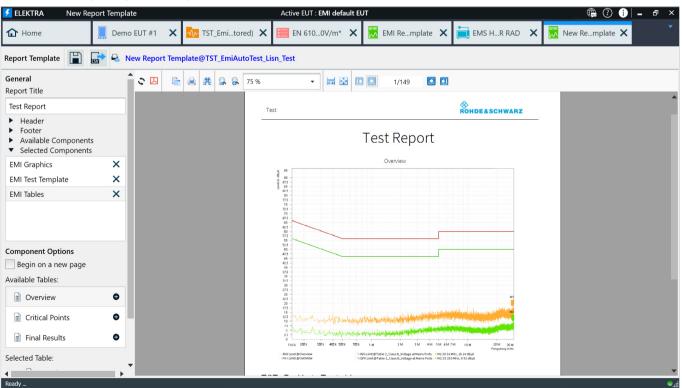
R&S°ELEKTRA fully utilizes the capabilities of modern receivers to increase measurement speed. R&S°ELEKTRA performs automated disturbance measurements with the R&S°ESW, R&S°ESRP, R&S°ESU, R&S°ESR, R&S°ESCI, R&S°ESPI and R&S°ESL test receivers and with the R&S°FSW, R&S°FSV, R&S°FSC, R&S°FSH, R&S°FPL and R&S°FSL signal and spectrum analyzers. R&S<sup>®</sup>ELEKTRA automatically controls the equipment generating EMS test levels and manages amplifier band and signal path switching. It also monitors the EUT on multiple channels using appropriate test equipment.

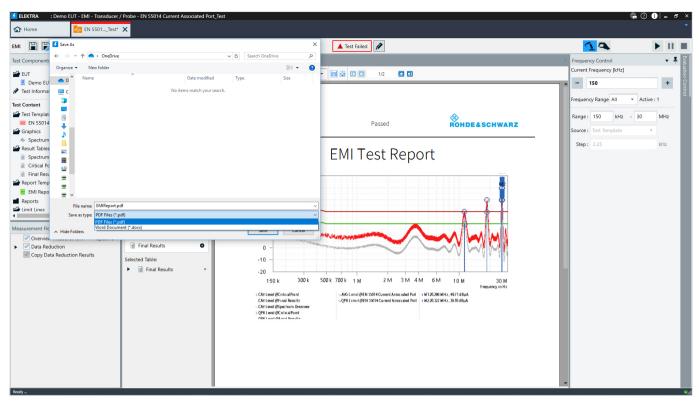
R&S<sup>®</sup>ELEKTRA automatically switches the phases of artificial mains networks when measuring conducted disturbance. It saves all measured values for data reduction and further analyses.

#### Easily analyze and document your results

R&S<sup>®</sup>ELEKTRA automatically collects, analyzes and evaluates measurement data for each individual test performed. It also features an easy-to-handle test report function that generates and saves test reports in .pdf or .docx format.

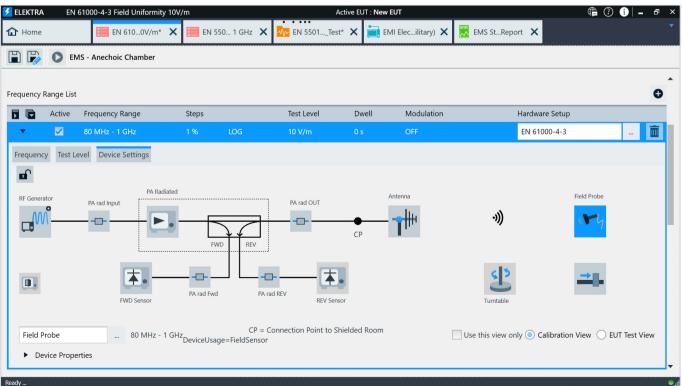
#### Multiple operations (e.g. running a test, creating hardware setups and test and report templates) can be performed simultaneously.





Saving a test report with analyzed and evaluated measurements in .pdf or .docx format.

#### Simultaneously working on templates while a test is running.



## **MIGRATION FEATURES**

#### **Migration wizard**

R&S®ELEKTRA makes it easy for R&S®ES-SCAN and R&S®EMC32 users to migrate hardware setups, test templates, settings and tests from R&S®ES-SCAN and R&S®EMC32 to R&S®ELEKTRA.

#### Supports variety of instruments and system components

Generic device drivers provide flexibility to interface with a variety of instruments. The library of test setups allows the easy exchange of instruments by detecting available hardware.

#### Backup

R&S<sup>®</sup>ELEKTRA provides both automatic and manual backup options to ensure that configurations, test setups, results and reports are safely archived.

¥		R&\$	S©ES-SCAN to R&S©ELEKTRA - XML Data Converter						
Source Data File Path			XML Destination File Path						
C:\Program Files (x86)\Rohde-Schwarz\EMC32			C:\ElektraMigrationResults						
Corporam Files (x86)/Rohde-Schwarz/EMC32     Configuration     Gamma Amplifiers     Generators     Gonitoring     Gonitor			Converting XML File Mode:  Combined XML File Name: Migration Data Create Separate Files (Same Names as the Source Files)						
			Folder Summary       Total Files Validated:     20       Files Pass:     12       Files Fail:     8						
Source Data: R&S©EMC32 Devices Data Type: All  Device Names: 12 of 20 are selected.		•	Total Warnings: 1						
	<b>A</b> Ø	2 *							
SG (Type: SMB100A) - EMC32.DeviceList	🥥 🎍	,							
BBA150-A125BC125 BandA (Type: BBA150 Amplifier) - EMC32.Devic	🥥 🖉	2							
BBA150-A125BC125 BandBC (Type: BBA150 Amplifier) - EMC32.Devi	🥥 🖉	2							
BBA150 SW (Type: BBA100) - EMC32.DeviceList	<b>A</b>	2							
NRP6A FWD (Type: NRPxxS(N) (USB)) - EMC32.DeviceList	<b>A</b>	<b>&gt;</b> -							
Abort Convert >>>			10% complete						

#### Generic drivers also support third-party instruments.

ELEKTRA 3.10 : Dashboa	ard						🏶 🕘 🚺 🗕 🗗 🗙
1 Home							*
Dashboard	X Q. Please enter your search keywords	Select 'Modified' in th	ing a search, otherwise the se ne combo box 'Show Devices' t	arch results might not be complete. to see unsaved devices.			🖳 🗙 🖷
EUTs	▼ Field Probe	🕈 Type	Interface	Address	Connection	Permanent	Functions
<mark>योहरू</mark> Tests	▼ 2 <sup>™</sup> Field Probe	Generic Field Probe	• ТСР/ЛР	TCPIP0::0.0.0.0::10000::SOCKET	43		× 🖪 🖻 🖬 😫
Test Templates	General Connection Configuration Measurement	Correction Functional Check Import/Export Settings Load from XML file	Save as XML file				
Report Templates	Generic Commands	SCPI Command String	Command Execution				
📄 Hardware Setups	Do Zeroing Set Frequency Get Option	1 "IDN?	Execute				
CHCs Device List	Global Communication End Global Initialize	Required Substring in Answer	Result				
🎫 Tables 🔹	Identification Initialize Mode	LUMILOOP					
🔀 Tools 🔹 🔻	Check Active Activate Frequency Correction Trigger Measurement						
Archive	Set Measurement Axis Set Averaging Count						
💁 Administration 🔻	Measurement Poll Command Read All Axis Read Measurement Axis						
	▶ LISN						
	Receiver						
	<ul> <li>Transducer</li> </ul>						
<ul> <li>Devices</li> </ul>							4 Q
<b>€</b>							Becheck     Search     Device

#### Migration wizard.

🗲 ELEKTRA Home				Active EUT : Demo EUT					@	) _ & ×
🔂 Home	Demo EUT	× 🔳 en	550 1 GHz 🗙	🐠 EN 5501Test* 🗙	🔀 Examplmplate	🗙 詞 емі е	ilecercial) 🗙			
Device List	≣ × £	Create a Bao	-luum							
Tables 🔻	You've done a ba		10-24 Wednesday							
🔀 Tools 🔹 🔻	Configuration									
🍳 Administration 🔺	Keep the last	10 -	— — backups							
	Make a backup	Daily 🔻								
🛓 Backup	Backup Files		Description		Keep Backup?	File Size	Date of Creati	Version		
EUT Settings	ELEKTRA_20	181024_175				2.3 MB	10/24/2018 5:52:	2.00.0	9	
Graphics Settings										
🔀 Report Settings										
P License Management										
Eog Settings										
🤹 General Settings										
Devices										
Ready										•

R&S®ELEKTRA offers automatic and manual backup options.

### AUTOMOTIVE AND MILITARY EXTENSION

R&S<sup>®</sup>ELEKTRA supports full automotive and military EMS testing with the R&S<sup>®</sup>ELEMS-AMEX option.

#### Supported standards with R&S®ELEMS-AMEX

R&S®ELEKTRA supports EMS measurements in line with common automotive and military standards such as MIL-STD-461, ISO11451 and ISO11452 as well as various OEM standards. These standards cover digitally modulated interferer signals (e.g. OFDM signals) and radar pulse interferers.

Automotive and military standards require specific setups and procedures for measuring susceptibility to RF interference. These requirements relate, for example, to modulation, level adjustment and system monitoring, and are supported by the R&S®ELEMS-AMEX option.

#### **Special interface**

Automotive components are usually equipped with an interface for communication over bus systems such as CAN or LIN. The R&S®EMCAN64 middleware included with the R&S®ELEMS-AMEX software allows read and write access from R&S®ELEKTRA to these buses using the common CANoe and CANalyzer software tools from Vector Informatik GmbH.

### **ORDERING INFORMATION**

Designation	Туре	Order No.
Hardware		
License dongle	R&S <sup>®</sup> 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 <sup>®</sup> 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 <sup>®</sup> 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 <sup>®</sup> ELEMC-DRV	5601.0230.02
EMC extension for report generation	R&S®ELEMC-REP	5601.0460.02
Oscilloscope drivers (monitoring)	R&S <sup>®</sup> ELEMC-SCP	5601.0630.02
Radiated spurious emission measurements	R&S <sup>®</sup> ELEMI-RSE	5601.0253.02
EMI extension for multiband (multireceiver) measurements	R&S <sup>®</sup> ELEMI-MBM	5601.0676.02
3D results evaluation	R&S®ELEMI-3D	5601.0260.02
5G signaling for R&S <sup>®</sup> CMX500	R&S®ELEMS-5GS	5601.0276.02
EMI extension for 5G radiated spurious emission measurements in line with FCC standards	R&S®ELEMI-5GFC	5601.0682.02
EMS test software extension for automotive and military EMS measurements	R&S®ELEMS-AMEX	5601.0353.02
Software bundles		
EMI advanced test software package	R&S <sup>®</sup> ELEMI-EA	5601.0424.02
EMI advanced system test software package	R&S®ELEMI-EAS	5601.0382.02
EMI advanced and system test software package	R&S <sup>®</sup> 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
Software maintenance (required from version 3.10)		

One year software maintenance is optionally available for each software item. Please contact your local Rohde&Schwarz sales office.

。 北京海洋兴业科技股份有限公司(证券代码: 839145)

北京市西三旗东黄平路19号龙旗广场4号楼(E座)906室 电话: 010-62176775 62178811 62176785 企业QQ: 800057747 维修QQ: 508005118 企业官网: www.hyxyyq.com

邮编: 100096 传真: 010-62176619 邮箱: market@oitek.com.cn 购线网: www.gooxian.com 查找微信公众号:海洋仪器



扫描一维码关注我们