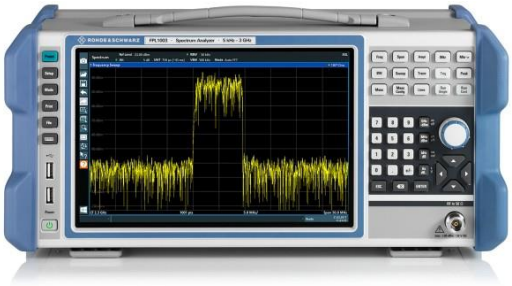
LabWindows/CVI, VXIpnp driver history for the R&S® FPL1000 Spectrum Analyzer

Products:

- R&S®FPL1000



- R&S®ZNL (Option B1)

Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.

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March 22, 2021

ROHDE&SCHWARZ

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1 Supported Instruments

In the following table, the supported R&S instruments and firmware versions are listed:

Which instruments are supported?		
Current revision of instrument driver supports these instruments and firmware versions:		
Instrument	**Supported Firmware**	**Remarks**
FPL1000	1.70	
ZNL (Option B1)	1.35	

2 Getting Started

2.1 LabWindows/CVI driver

The Rohde & Schwarz **rsfpl** Instrument driver can be used in LabWindows/CVI 6 and later. In order to be able to compile an application it is required to add following files to your LabWindows/CVI project:

- *rsfpl.c + rsfpl.h*
- *rsfpl_attributes.c + rsfpl_attributes.h*
- *rsfpl_utility.c + rsfpl_utility.h*
- *rsidr_core.c + rsidr_core.h*
- *rsfpl_callbacks.c*
- *rsfpl.fp + rsfpl.sub*

2.2 VXIplug&play driver in C/C++, LabWindows/CVI

In this case, the compiled source code from LabWindows/CVI driver is used. The compiled ANSI-C libraries exist for Windows XP and newer, 32-bit / 64-bit.

Add the following files to your 32-bit target project:

- C:\Program Files (x86)\IVI Foundation\VISA\WinNT\include\rsfpl.h
- C:\Program Files (x86)\IVI Foundation\VISA\WinNT\lib\msc\rsfpl.lib (static)
- C:\Program Files (x86)\IVI Foundation\VISA\WinNT\Bin\rsfpl_32.dll (dynamic)
- C:\Program Files (x86)\IVI Foundation\VISA\WinNT\rsfpl\rsfpl.fp (in CVI only)
- C:\Program Files (x86)\IVI Foundation\VISA\WinNT\rsfpl\rsfpl.sub (in CVI only)

Add the following files to your 64-bit target project:

- C:\Program Files\IVI Foundation\VISA\Win64\Include\rsfpl.h
- C:\Program Files\IVI Foundation\VISA\Win64\Lib_x64\msc\rsfpl64.lib (static)
- C:\Program Files\IVI Foundation\VISA\Win64\Bin\rsfpl_64.dll (dynamic)
- C:\Program Files\IVI Foundation\VISA\Win64\rsfpl\rsfpl.fp (in CVI only)
- C:\Program Files\IVI Foundation\VISA\Win64\rsfpl\rsfpl.sub (in CVI only)

2.3 VXIplug&play driver in MATLAB

MATLAB instrument driver **rsfpl.mdd** can be found in:

32-bit driver
C:\Program Files (x86)\IVI Foundation\VISA\WinNT\rsfpl\rsfpl.mdd

64-bit driver
C:\Program Files\IVI Foundation\VISA\Win64\rsfpl\rsfpl.mdd

For detailed description on how to use the driver in MATLAB please refer to the Application Note 1MA171 - How to use R&S instrument in MATLAB

2.4 Linux and Mac OS X

To be able to use Rohde & Schwarz **rsfpl** Instrument driver in Linux or Mac OSX, the functioning VISA is required. Then, the process is the same as using LabWindows/CVI driver.

2.5 Additional Help

LabWindows/CVI and VXIplug&play instrument driver contains in addition the instrument driver documentation in compressed HTML format (Windows CHM help file **rsfpl_vxi.chm**) and stored together with the driver sources or in the following folder:

32-bit driver
C:\Program Files (x86)\IVI Foundation\VISA\WinNT\rsfpl\rsfpl_vxi.chm

64-bit driver
C:\Program Files\IVI Foundation\VISA\Win64\rsfpl\rsfpl_vxi.chm

3 LabWindows/CVI and VXIplug&play driver history

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
1.70.0	03/2021	* RsCore updated to 3.13.0 * Improved help for rsfpl_init(), rsfpl_InitWithOptions() * Optimized help texts for status codes * New: - Added Phase Noise subsystem - rsfpl_ConfigurePowerSensorSensorLevelOffset - rsfpl_ConfigureInternalGeneratorState - rsfpl_ConfigureInternalGeneratorUsage - rsfpl_ConfigureInternalGeneratorIndependentCWSource - rsfpl_ConfigureInternalGeneratorTrackingGenerator - rsfpl_ConfigureInternalGeneratorPowerSweep - rsfpl_ConfigureInternalGeneratorFrequencyOffset - rsfpl_InternalGeneratorCalibrateTransmission - rsfpl_InternalGeneratorCalibrateReflection - rsfpl_InternalGeneratorRecallCalibrationSettings - rsfpl_InternalGeneratorSaveCalibrationSettings - rsfpl_InternalGeneratorQueryCalibrationSaveFilePath - rsfpl_InternalGeneratorSaveAsTransducerFactor - rsfpl_OutputLoudspeakerMute - rsfpl_ConfigureSubwindowYAxisReferenceValue - rsfpl_ConfigureMarkerZoomFactor - rsfpl_ApplyWindowPresetTraces - rsfpl_ApplySubwindowPresetTraces - rsfpl_WindowSetFocus - rsfpl_SubwindowSetFocus - rsfpl_ConfigurePowerDisplayLine - rsfpl_ConfigureDataXValueDistribution - rsfpl_HcopyMode - rsfpl_ConfigureTestReportTemplateGeneralSettings - rsfpl_ConfigureTestReportTemplateRawDataStorage - rsfpl_ConfigureTestReportTemplateTitlePageLine - rsfpl_ConfigureTestReportTemplateLogo - rsfpl_ConfigureTestReportTemplateSelectedItems - rsfpl_ConfigureTestReportTemplateSelectedItemsString - rsfpl_QueryTestReportTemplateCatalogue

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
		- rsfpl_SaveTestReportTemplate - rsfpl_LoadTestReportTemplate - rsfpl_DeleteTestReportTemplate - rsfpl_TestReportRestoreDefaults - rsfpl_TestReportNew - rsfpl_TestReportAppend - rsfpl_TestReportRemoveSet - rsfpl_TestReportRemoveAllSets - rsfpl_ConfigureTestReportTitlePage - rsfpl_ConfigureTestReportIncludeUserDefinedInformation - rsfpl_QueryTestReportItemList - rsfpl_TestReportSave - rsfpl_ConfigureSystemDateTime - rsfpl_QuerySystemDateTime - rsfpl_CalibrateAll - rsfpl_RecallCalibration - rsfpl_SaveCalibration - rsfpl_QueryCalibrationSaveFilePath - rsfpl_ConfigureCompressionPointMeasurementEnabled - rsfpl_ConfigureCompressionPointMeasurementReference - rsfpl_ConfigureCompressionPointMeasurementSelectCompressionPoints - rsfpl_QueryCompressionPointMeasurement1dBResult - rsfpl_QueryCompressionPointMeasurement3dBResult - rsfpl_QueryCompressionPointMeasurementNdBResult - rsfpl_ConfigureSweepListSymmetricalSetupEnabled - rsfpl_QueryThirdOrderInterceptResultMaximum - rsfpl_QueryThirdOrderInterceptResultMinimum - rsfpl_ConfigureAndInitiateListEvaluationMeasurementElectronic - rsfpl_ConfigureAndInitiateListEvaluationMeasurementElectronicSynchronized - rsfpl_SelectIQDataFile - rsfpl_QueryNoiseFrequencyTableData - rsfpl_ConfigureNoiseFigureUncertaintySource - rsfpl_ConfigureNoiseFigureUncertaintyResistorTempUncertainty - rsfpl_ConfigureNoiseFigureUncertaintyCalibrationSource - rsfpl_ConfigureNoiseFigureUncertaintyCalibrationResistorTempUncertainty - rsfpl_ConfigureNoiseFigureUncertaintyDUTInputMatch - rsfpl_ConfigureNoiseFigureUncertaintyDUTOutputMatch - rsfpl_ConfigureNoiseFigureUncertaintyDUTCharacteristics - rsfpl_ConfigureNoiseFigureUncertaintyPreampCharacteristics - rsfpl_QueryNoiseFigureUncertaintyAnalyzerCharacteristics - rsfpl_QueryNoiseFigureUncertaintyResult	

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
		- rsfpl_ConfigureVSAFrameAPSKNState - rsfpl_ConfigureVSAFrameASKNState - rsfpl_QueryVSAMeasurementDirty - rsfpl_QueryVSABitErrorRateResults - rsfpl_VSADSPMarkerToStartOfSelectedResultRange - rsfpl_VSADSPDeltaMarkerToStartOfSelectedResultRange - rsfpl_QueryVSADSPCaptureNumberOfBursts - rsfpl_QueryVSADSPCaptureNumberOfPatterns - rsfpl_QueryVSADSPCurrentRangeBurstLength - rsfpl_QueryVSADSPCurrentRangeBurstPresent - rsfpl_QueryVSADSPCurrentRangeBurstStart - rsfpl_QueryVSADSPCurrentRangePatternConfidence - rsfpl_QueryVSADSPCurrentRangePatternCorrect - rsfpl_QueryVSADSPCurrentRangePatternPresent - rsfpl_QueryVSADSPCurrentRangePatternStart * Updated: - rsfpl_ConfigurePowerSensorAbsolutePowerUnit - Units updated - rsfpl_ConfigureAdjustLengthOfMeasurement - Help updated - rsfpl_ConfigureTriggerRepetitionInterval - Range updated - rsfpl_ConfigureMarkerPeakList - No of peaks range updated - rsfpl_ConfigureAndInitiateListEvaluationMeasurement - No longer synchronized - rsfpl_ConfigureAndInitiatePulsePowerMeasurement - Trigger sources updated - rsfpl_ConfigureAndInitiatePulsePowerMeasurementSynchronized - Trigger sources updated - rsfpl_ConfigureAndReadPulsePowerMeasurement - Trigger sources updated - rsfpl_ConfigureIQAnalyzerSettings - Triggers updated - rsfpl_ConfigureNoiseCalibrationNoiseSource - Smart noise source added - rsfpl_ConfigureNoiseMeasurementNoiseSource - Smart noise source added - rsfpl_ConfigureNoiseFrequencyTableData - Help updated - rsfpl_ConfigureADEMDemodulator - Trigger sources updated - rsfpl_ConfigureEMILISNVNetwork - Network types updated - rsfpl_ConfigureVSAStandardPreset - Help updated - rsfpl_ConfigureVSAModulationFSK - FP and function fixed - rsfpl_ConfigureVSASignalStructureBurst - Helps and ranges updated - rsfpl_ConfigureVSASymbolNumberAtReference - Range updated * Deleted: - rsfpl_GetVSAPatternFound - rsfpl_QueryVSAResultsBERFormat
1.30.0	08/2019	* RsCore updated to 3.6.1 * Updated:

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
		- rsfpl_ConfigureChannelPowerAdjacentChannel - Updated range for Spacing parameter - rsfpl_ConfigureChannelPowerAlternateChannel - Updated range for Spacing parameter - rsfpl_HcopyFileFormat - WMF, EWMF, DPF, SG, DOC and RTF added - rsfpl_ConfigureRBWFilterType - 5-pole, RRC, CISPR, and MIL Std filters added - rsfpl_ConfigureTriggerSource - Baseband Power added - rsfpl_ConfigureAndInitiateListEvaluationMeasurement - Range table added to Filter Type parameter - rsfpl_SetStatusRegister - Added 'CORRection' commands - rsfpl_GetStatusRegister - Added 'CORRection' commands - rsfpl_ConfigureMarkerAutoPeakSearch - Bug preventing min search setting fixed - rsfpl_ConfigureAndInitiateListEvaluationMeasurement, - rsfpl_ConfigureAndInitiateListEvaluationMeasurementSynchronized, - rsfpl_QueryListEvaluationResults - Improved error elaboration for some invalid parameters. - rsfpl_ReadListEvaluationMeasurement - Bug preventing successful execution fixed. - rsfp_FetchIQData, rsfpl_ReadIQData - API changed - I,Q parameters - data type to ViReal64 - rsfpl_viWrite renamed to rsfpl_WriteCommand * New: - Added VSA subsystem - rsfpl_ConfigureMultiThreadLocking - rsfpl_ConfigureAutoSystemErrQuery - rsfpl_SelectMeasurementChannelByType - RSFPL_ATTR_RF_INPUT_SELECT - rsfpl_ConfigureSubwindowHorizontalScale RSFPL_ATTR_SUBWINDOW_HORIZONTAL_SCALE - rsfpl_ConfigureRFInputSAWFilter RSFPL_ATTR_RF_INPUT_SAW_FILTER - rsfpl_ConfigureSubwindowYAxisScaling RSFPL_ATTR_SUBWINDOW_Y_AXIS_SCALING RSFPL_ATTR_SUBWINDOW_Y_AXIS_SCALING_MODE - rsfpl_ConfigureWindowSweepPoints RSFPL_ATTR_WINDOW_SWEEP_POINTS - rsfpl_ConfigureExternalTriggerLevel RSFPL_ATTR_EXTERNAL_TRIGGER_LEVEL - rsfpl_ConfigureMarkerLinking RSFPL_ATTR_MARKER_LINKING - rsfpl_QueryMarkerAmplitude RSFPL_ATTR_MARKER_AMPLITUDE - rsfpl_ConfigureMarkerProbability RSFPL_ATTR_MARKER_PROBABILITY - rsfpl_NoiseMeasurementMarkerAllOff RSFPL_ATTR_NOISE_MEASUREMENT_MARKER_ALL_OFF - rsfpl_BandPowerMarkerAllOff	

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
		RSFPL_ATTR_BAND_POWER_MARKER_ALL_OFF - rsfpl_ConfigureSpuriousEmissionsBreakMeasurementEnabled RSFPL_ATTR_SPURIOUS_EMISSIONS_BREAK_MEASUREMENT_ENABLED - rsfpl_AdjustSpuriousEmissionsXAxis RSFPL_ATTR_SPURIOUS_EMISSIONS_ADJUST_X_AXIS - rsfpl_ConfigureStatisticalMeasurement RSFPL_ATTR_SIGNAL_STATISTIC_APD_ENABLED RSFPL_ATTR_SIGNAL_STATISTIC_CCDF_ENABLED RSFPL_ATTR_SIGNAL_STATISTIC_NUMBER_OF_SAMPLES - rsfpl_ConfigureSignalStatisticScaling RSFPL_ATTR_SIGNAL_STATISTIC_SCALING_X_REF_LEVEL RSFPL_ATTR_SIGNAL_STATISTIC_SCALING_X_RANGE RSFPL_ATTR_SIGNAL_STATISTIC_SCALING_Y_UNIT RSFPL_ATTR_SIGNAL_STATISTIC_SCALING_Y_MINIMUM RSFPL_ATTR_SIGNAL_STATISTIC_SCALING_Y_MAXIMUM - rsfpl_SetSignalStatisticScalingSettings RSFPL_ATTR_SIGNAL_STATISTIC_DEFAULT_SETTING RSFPL_ATTR_SIGNAL_STATISTIC_ADJUST_SETTINGS - rsfpl_QueryStatisticalMeasurementResults - rsfpl_QueryStatisticalMeasurementCCDFLevel - rsfpl_ConfigureSignalStatisticGatePeriod RSFPL_ATTR_SIGNAL_STATISTIC_GATE_PERIOD - rsfpl_ConfigureSignalStatisticGateComment RSFPL_ATTR_SIGNAL_STATISTIC_GATE_COMMENT - rsfpl_ConfigureSignalStatisticGateRange RSFPL_ATTR_SIGNAL_STATISTIC_GATE_RANGE_ENABLED RSFPL_ATTR_SIGNAL_STATISTIC_GATE_RANGE_START RSFPL_ATTR_SIGNAL_STATISTIC_GATE_RANGE_STOP - rsfpl_ConfigureDisplayFormat RSFPL_ATTR_DISPLAY_FORMAT - rsfpl_ConfigureSubwindowDisplaySingleZoomEnabled RSFPL_ATTR_SUBWINDOW_DISPLAY_SINGLE_ZOOM_ENABLED - rsfpl_ConfigureSubwindowSingleZoom - rsfpl_ConfigureSubwindowMultipleZoomEnabled RSFPL_ATTR_SUBWINDOW_MULTIPLE_ZOOM_ENABLED - rsfpl_SubwindowMultipleZoom - rsfpl_ConfigureNoiseInputLossTemperature RSFPL_ATTR_NOISE_INPUT_LOSS_TEMPERATURE - rsfpl_QueryNoiseInputLossTableList RSFPL_ATTR_NOISE_INPUT_LOSS_TABLE_LIST - rsfpl_ConfigureNoiseOutputLossTemperature

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
		RSFPL_ATTR_NOISE_OUTPUT_LOSS_TEMPERATURE - rsfpl_QueryNoiseOutputLossTableList RSFPL_ATTR_NOISE_OUTPUT_LOSS_TABLE_LIST - rsfpl_ConfigureNoiseCalibrationLossMode RSFPL_ATTR_NOISE_CALIBRATION_LOSS_MODE - rsfpl_ConfigureNoiseCalibrationLossConstant RSFPL_ATTR_NOISE_CALIBRATION_LOSS_CONSTANT - rsfpl_ConfigureNoiseCalibrationLossTemperature RSFPL_ATTR_NOISE_CALIBRATION_LOSS_TEMPERATURE - rsfpl_SelectNoiseCalibrationTable RSFPL_ATTR_NOISE_CALIBRATION_LOSS_SELECTED_TABLE - rsfpl_DefineNoiseCalibrationLossTable RSFPL_FUNC_DEFINE_NOISE_CALIBRATION_LOSS_TABLE - rsfpl_DeleteNoiseCalibrationLossTable RSFPL_ATTR_NOISE_CALIBRATION_LOSS_DELETE_TABLE - rsfpl_QueryNoiseCalibrationLossTableList RSFPL_ATTR_NOISE_CALIBRATION_LOSS_TABLE_LIST - rsfpl_ConfigureNoiseDUTLOType RSFPL_ATTR_NOISE_DUT_LO_TYPE - rsfpl_ConfigureNoiseDUTFixedIFFrequency RSFPL_ATTR_NOISE_DUT_FIXED_IF_FREQUENCY - rsfpl_ConfigureNoiseMeasurementPoints RSFPL_ATTR_NOISE_MEASUREMENT_POINTS - rsfpl_QueryNoiseMarkerResults - rsfpl_QueryNoiseDeltaMarkerResults - rsfpl_QueryADEMTraceResultModulationFrequency RSFPL_ATTR_ADEM_TRACE_RESULT_MODULATION_FREQUENCY - rsfpl_QueryADEMTraceResultCarrierPower RSFPL_ATTR_ADEM_TRACE_RESULT_CARRIER_POWER - rsfpl_ConfigureEMIMeasurement RSFPL_ATTR_EMI_MEASUREMENT_ENABLED RSFPL_ATTR_EMI_MEASUREMENT_DWELL_TIME - rsfpl_ConfigureEMILISNVNetwork RSFPL_ATTR_EMI_LISN_V_NETWORK_TYPE RSFPL_ATTR_EMI_LISN_V_NETWORK_PHASE RSFPL_ATTR_EMI_LISN_V_NETWORK_HIGH_PASS_FILTER - rsfpl_EMIMeasurementMarkerPeakSearch RSFPL_ATTR_EMI_MEASUREMENT_MARKER_PEAK_SEARCH - rsfpl_ConfigureEMIMeasurementMarkerDetector RSFPL_ATTR_EMI_MEASUREMENT_MARKER_DETECTOR - rsfpl_QueryEMIMeasurementMarkerResult

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
		RSFPL_ATTR_EMI_MEASUREMENT_MARKER_RESULT - rsfpl_QueryEMIMeasurementMarkerLimitCondition RSFPL_ATTR_EMI_MEASUREMENT_MARKER_LIMIT_CONDITION - rsfpl_QueryEMIMeasurementMarkerLimitVerticalDistance RSFPL_ATTR_EMI_MEASUREMENT_MARKER_LIMIT_VERTICAL_DISTANCE - rsfpl_EMIMeasurementDeltaMarkerPeakSearch RSFPL_ATTR_EMI_MEASUREMENT_DELTA_MARKER_PEAK_SEARCH - rsfpl_ConfigureEMIMeasurementDeltaMarkerDetector RSFPL_ATTR_EMI_MEASUREMENT_DELTA_MARKER_DETECTOR - rsfpl_QueryEMIMeasurementDeltaMarkerResult RSFPL_ATTR_EMI_MEASUREMENT_DELTA_MARKER_RESULT - rsfpl_QueryEMIMeasurementDeltaMarkerLimitCondition RSFPL_ATTR_EMI_MEASUREMENT_DELTA_MARKER_LIMIT_CONDITION - rsfpl_QueryEMIMeasurementDeltaMarkerLimitVerticalDistance RSFPL_ATTR_EMI_MEASUREMENT_DELTA_MARKER_LIMIT_VERTICAL_DISTANCE - rsfpl_ConfigureDataInstrumentSettingsRecallMode RSFPL_ATTR_DATA_INSTRUMENT_SETTINGS_RECALL_MODE - rsfpl_DataResultsImportTrace - rsfpl_QueryFactoryDefaultIDN RSFPL_ATTR_GENERAL_GET_IDN_STRING_FACTORY - rsfpl_ConfigureCalibrationSignalFrequency43MHzPlus RSFPL_ATTR_CALIBRATION_SIGNAL_FREQUENCY_43_MHZ_PLUS - rsfpl_ConfigureCalibrationSignalFrequency7GHzPlus RSFPL_ATTR_CALIBRATION_SIGNAL_FREQUENCY_7_GHZ_PLUS - rsfpl_ConfigureCalibrationSignalWidebandFrequency RSFPL_ATTR_CALIBRATION_SIGNAL_WIDEBAND_FREQUENCY - rsfpl_ConfigureCalibrationSignalPeakDistance RSFPL_ATTR_CALIBRATION_SIGNAL_PEAK_DISTANCE - rsfpl_ErrorList RSFPL_ATTR_SYSTEM_ERROR_LIST - rsfpl_ErrorListSpecificType - rsfpl_ClearInstrumentErrors RSFPL_ATTR_SYSTEM_CLEAR_ERRORS - rsfpl_ClearRemoteErrors RSFPL_ATTR_SYSTEM_CLEAR_REMOTE_ERRORS_TABLE - rsfpl_QueryRemoteErrors - rsfpl_QuerySystemBatteryLevel RSFPL_ATTR_SYSTEM_BATTERY_LEVEL * Removed: - rsfpl_viRead
1.20.0	07/2018	- Added Noise Figure measurement

rsfpl Instrument Driver		
Driver history for LabWindows/CVI and VXIplug&play Instrument Driver for C/C++, VEE, etc.		
Revision	Date	Note
		- Added Analog Demodulation measurement
1.1.0	07/2018	Added IQ Analyzer
1.0.0	06/2018	Initial Release

About Rohde & Schwarz
Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 80 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment
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- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

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