

Selective Radiation Meter

SRM-3006

Selective measurement of high frequency electromagnetic fields

Complete, easy to use test system, consisting of a base unit and measuring antennas, for non-directional detection of fields and their sources in the frequency range from 9 kHz to 6 GHz

- ▲ **Measurements conforming to ICNIRP and regional standards with results displayed directly in terms of the permitted limit value**
- ▲ **Fast, reliable results using predefined measurement routines, setups, and automatic settings**
- ▲ **PC software for customizing tables and measurement routines, and subsequent evaluation and handling of large quantities of measurement data**
- ▲ **Suitable for outdoor use: Radiation protected, robust, splash-proof, ergonomically designed; uses exchangeable rechargeable batteries; equipped with integrated GPS and voice recorder**
- ▲ **Signals analyzed using application oriented operating modes and special evaluation functions**
- ▲ **Direct numerical, graphical or tabular display of results; large resolution bandwidth avoids conversions**
- ▲ **Editable tables for automatic correlation of results with telecommunications services (e.g. broadcasting, GSM, WiMAX)**



THE SRM AND ITS APPLICATIONS

The Selective Radiation Meter SRM is a compact, frequency-selective measuring system for safety analysis and environmental measurements of high-frequency electromagnetic fields. It covers broadcasting, mobile telephony, and industrial frequencies from the lowest long-wave range up to the latest wireless applications and evaluates the field exposure level in accordance with international or national standards.

Where the field environment is unknown – in offices, factory buildings, public places, or private homes – the SRM provides authorities and measurement service providers with a rapid overview of the field sources that are relevant to human safety.

Where the field situation is known, such as at so-called “shared sites”, where several service providers share a common antenna site, the SRM shows the overall field exposure level as well as the proportions due to each service as an absolute value or as a percentage of the permitted limit value.

Users can resolve services down to individual channel accuracy and measure their contribution to the field emission with the SRM. It is also possible to integrate over the entire frequency range of the service and display the absolute result or the value relative to the permitted limit.

OPERATION AND USE

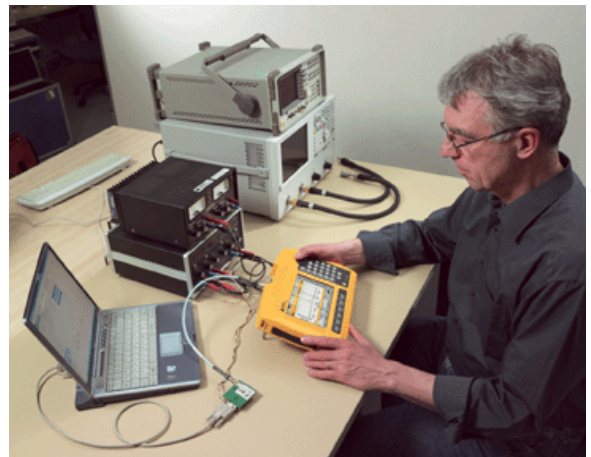
All functions and parameters can be set directly on the SRM basic unit via menus and the numerical keypad, softkeys, or the rotary control. As well as this, the SRM also provides facilities for saving and recalling measurement settings (setups) and entire measurement sequences (routines). The PC software included with the device, “SRM-3006 Tools”, includes editable tables for antennas and cables from other manufacturers, user-defined evaluation curves, and lists of services and operators.

OPERATING MODES

The SRM is designed for everyday use and has operating modes tailored to the main areas of application: Safety Evaluation, Spectrum Analysis, Level Recorder, Scope and UMTS. Details about these operating modes and other functions are given in the Specifications.

ANTENNAS

Narda offers a broad range of three-axis and single-axis measuring antennas for electric fields (E-fields) and magnetic fields (H-fields). The three-axis antennas are advantageous in practice because they give isotropic (i.e. non-directional) results automatically.



PRODUCT INFORMATION (BASIC UNIT)

Basic Unit SRM- 3006		
Frequency Range	9 kHz to 6 GHz	
Modes	Spectrum Analysis Safety Evaluation Level Recorder Scope (Option) UMTS P-CPICH Demodulation (Option)	
RF Features		
Frequency	Resolution bandwidth	See specifications for each mode
	Phase noise ^a (SSB)	10 kHz carrier spacing < - 70 dBc/Hz 300 kHz carrier spacing < - 100 dBc/Hz
	Reference frequency	Initial deviation < 1.0 ppm Aging < 5 ppm over 15 years Thermal drift < 1.5 ppm (within specified operating temperature range)
Amplitude	Measurement range, setting (MR)	-30 dBm to +20 dBm (in 1 dB steps)
	RF attenuation	0 to 50 dB in steps of 1 dB (coupled with measurement range)
	Display range	1 dB above the measurement range
	Maximum RF power level	+ 27 dBm (damage level)
	Maximum DC voltage	50 V
	Intrinsic noise	< - 130 dBm or < MR - 100 dB for RBW = 1 kHz and f ≤ 30 MHz < - 126 dBm or < MR - 96 dB for RBW = 1 kHz and f ≤ 2 GHz < - 125 dBm or < MR - 95 dB for RBW = 1 kHz and f ≤ 4 GHz < - 120 dBm or < MR - 90 dB for RBW = 1 kHz and f ≤ 6 GHz (whichever is worse)
	2nd order intermodulation products	< -40 dBc for two single signals of level 6 dB below MR and a spectral line spacing of more than 1 MHz
	3rd order intermodulation products	< -60 dBc for two single signals of level 6 dB below MR and a spectral line spacing of more than 1 MHz
	Extended level measurement uncertainty	< +/- 1.2 dB for the entire frequency band (within the temperature range of 15 °C to 30 °C; valid for Spectrum Analysis and Safety Evaluation modes only)
	Spurious responses (input related)	< -60 dBc or MR -60dB (whichever is worse),
Spurious responses (residual)	< -90 dBm or MR -60dB, (whichever is worse), Except the following frequency range: 294 to 306 MHz and 4534 to 4586 MHz, where the value is < -85 dBm or MR -55 dB (whichever is worse)	
RF input	Type	N-Connector, 50 Ω
	Return loss ^b	> 12 dB for 1 kHz RBW, f ≤ 4.5 GHz and MR ≥ -28 dBm > 10 dB for 1 kHz RBW, f > 4.5 GHz and MR ≥ -28 dBm

Unless otherwise stated, the quoted specifications apply only within the temperature range 20°C to 26°C and relative humidity between 25 % and 75 %.
The device must be switched on for at least 30 minutes before the specifications can be checked.

^a Verification at 57.5 MHz; 2140.5 MHz and 4500.5 MHz

^b Typical value

SPECTRUM ANALYSIS MODE		
Measurement principle	Spectrum analysis	
Resolution bandwidths (RBW) (-3 dB)	10 Hz to 20 MHz (in steps of von 1, 2, 3, 5, 10, 20) List of available RBWs depends on selected sweep SPAN	
Video bandwidth (VBW)	0.2 Hz to 2 MHz (depending on the selected RBW)	
Measurement range setting (MR)	Set individually from a list or using the "MR Search" function for determining the optimum measurement range at a given time	
Filter	Type	Gaussian
	Shape factor (-3 dB / 60 dB)	<3.8 (for RBW ≤ 100 kHz)
Result Type	ACT: Displays instantaneous (actual) spectrum MAX: Maximum hold function AVG: Average over a selectable number of spectra (4 to 256) or a selectable time period (1 to 30 minutes) Max AVG: Maximum hold function after averaging over a defined number of spectra Min: Minimum hold function Min AVG: Minimum hold function after averaging over a defined number of spectra Standard: Display of the selected safety standard. SAVG: Spatial Averaging; Types: „continuous“ or „discrete“	
Marker functions	Delta marker on one Result Type or for displaying the difference between two Result Types Highest peak, next peak right, next peak left, next higher peak, next lower peak Information provided by Marker: frequency, level, service name according to the selected service table	
Evaluation functions	Peak table (list of 50 highest peaks) Integration over a user-specified frequency range	
Axis	Isotropic measurement (isotropic result displayed directly) Measurement of X-, Y- or Z- axis (separate measurement of a single axis using the isotropic / three-axis antenna)	
Display functions	Y-scale range 20, 40, 60, 80, 100 or 120 dB Y-scale reference MR -100 dB to MR + 20 dB (-130 dB to 40 dBm) Screen arrangement: Enlarges result display area by hiding other information.	
Zoom	Zoom Min: Sets the lower frequency limit of the zoom window Zoom Max: Sets the upper frequency limit of the zoom window Zoom Cent: Moves the zoom window along the frequency axis Zoom Span: Changes the scale of the zoom window Execute Zoom: Sets the zoom window limits to the selected frequency values	
Extras (Transfer Parameters)	"Go to ..." transfers the Center Frequency and Span to other operating modes Selection of individual services allows "zapping" through a service table	

SAFETY EVALUATION MODE	
Measurement principle	Spectrum analysis, followed by integration over user-defined frequency bands ("services")
Number of Services	1 to 500, define on instrument or by PC Software SRM-3006 Tools
Name of Services	User definable, maximum 15 characters by PC Software SRM-3006 Tools
Resolution bandwidths RBW (-3 dB)	Automatic (Auto): frequency range of the narrowest user-defined service divided by 4, but not more than 20 MHz User-defined (Manual) for all services out of the frequency range of the selectable RBWs Individual: separately defined for each individual service minimum service bandwidth divided by 4 (Other needs to be off)
Measurement range setting (MR)	Set individually from a list or using the "MR Search" function for determining the optimum measurement range at a given time
Detection	Root mean square value (RMS), $RMS \left(\text{integration time} \approx \frac{1}{RBW} \right)$
Filter	See Spectrum Analysis mode
Result Type	See Spectrum Analysis mode
Marker functions for bar graph view	Delta marker on one Result Type or for displaying the difference between two Result Types Highest peak, next peak right, next peak left, next higher peak, next lower peak Information provided by Marker: frequency, level, service name according to the selected service table
Evaluation Function	Distribution
Axis	Isotropic measurement (for direct display of the isotropic result) Measurement in the direction of the X, Y, and Z axis (separate measurement in one direction using an isotropic / three-axis measuring antenna)
Display	Table view showing service names, field strengths, RBW and the corresponding frequency band (up to three columns) Individual screen arrangement Sort function according to various criteria Bar graph of services showing contribution of different Result Types
Noise suppression	Identifies whether measured values are above the device noise floor by setting a threshold (selectable at 0, 3, 6, 10, 15, or 20 dB relative to device noise floor). Measurement values below the threshold are shown as the absolute threshold value marked with "<" (less than threshold)
Others On / Off	Measurement of services and gaps in the Service Table (Others On) or Measurement of services in the Service Table excluding gaps (Others Off)
Extras (Transfer Parameters)	"Go to ..." transfers the Center Frequency and Span to other operating modes

UMTS P-CPICH DEMODULATION MODE (OPTIONAL)		
Measurement principle	Demodulation of the P-CPICH (Primary Common Pilot Channel) as the basis for automatic assignment of measured field strength values to the individual UMTS radio cells	
UMTS channel selection	By entering the center frequency (Fcent)	
Resolution bandwidth(-3 dB)	3.84 MHz (fixed)	
Measurement range setting (MR Range)	Set individually from a list or using the "MR Search" function for determining the optimum measurement range at a given time	
Frequency setting resolution	100 kHz (for Fcent frequency entry)	
Detection	RMS (integration time = 10 ms)	
Filter	Type	Root-raised cosine (RRC)
	Roll-off factor	$\alpha = 0.22$
Demodulation algorithms	P-CPICH decoding dynamic typically -20 dB after EN50492 / IEC 62232	
Result types	ACT: Displays the current (actual) measured value. MAX: Max hold function. AVG: Averaging over a selectable number of measurement runs (4 to 256) or over a selectable time period (1 to 30 min). Max AVG: Max hold function after averaging over a selectable number of measurement runs. Min: Min hold function. Min AVG: Min hold function after averaging over a selectable number of measurement runs. Standard: Displays the selected safety standard.	
Evaluation functions	Extrapolation factor settable from 0 to 100 in steps of 0.001	
Axis	Isotropic measurement (for direct display of the isotropic result) Measurement in the direction of the X, Y, and Z axis (separate measurement in one direction using an isotropic / three-axis measuring antenna)	
Display	Up to 16 scrambling codes simultaneously	
	Value (instantaneous) and MAX Value (maximum) channel power	
	Number of sweeps since the last reset	
	Selection of individual scrambling codes	
	Extrapolation factor settable from 0 to 100 in steps of 0.001	
	Table	Table format: Index, Scrambling Code, Value, Max. Value, Ratio of Value to Analog Total of all ACT (Value) and MAX (Max Value) values (Total) Analog measurement result (Analog)
Noise suppression	Identifies whether measured values are above the device noise floor by setting a threshold (selectable at 0, 3, 6, 10, 15, or 20 dB relative to device noise floor). Measurement values below the threshold are shown as the absolute threshold value marked with "<" (less than threshold)	
Extras (Transfer Parameters)	"Go to ..." transfers the Center Frequency and RBW to other operating modes Selection of individual services allows "zapping" through a service table	

LEVEL RECORDER MODE		
Measurement principle	Selective level measurement at a fixed frequency setting.	
Detection	Peak Root mean square value (RMS), RMS (average time from 480 ms up to 30 min)	
Filter	Type Steep cutoff channel filter	
Resolution bandwidth RBW (-6 dB)	40 kHz to 32 MHz (10 steps per decade)	
Video bandwidth (VBW)	4 Hz to 32 MHz (depending on the selected RBW)	
Measurement range setting (MR)	Set individually from a list or using the "MR Search" function for determining the optimum measurement range at a given time	
Result Type	Peak ACT: Displays the current (actual) value Peak MAX: Max hold function RMS ACT: Averaging over a defined time period (0.48 seconds to 30 min) RMS MAX: Max hold function over the averaged values – with RMS detector only. SAVG: Spatial Averaging; Types: „continuous“ or „discrete“	
Axis	Measurement in the direction of the X, Y, and Z axis (separate measurement in one direction using an isotropic / three-axis measuring antenna)	
Noise suppression	Identifies whether measured values are above the device noise floor by setting a threshold (selectable at 0, 3, 6, 10, 15, or 20 dB relative to device noise floor). Measurement values below the threshold are shown as the absolute threshold value marked with "<" (less than threshold). Only applies to the numerical result display (Value)	
Extras (Transfer Parameters)	"Go to ... " transfers the Center Frequency and RBW to other operating modes Selection of individual services allows "zapping" through a service table	
SCOPE MODE (OPTION)		
Measurement principle	Selective level measurement at a selectable frequency	
Filter	Type Steep cutoff channel filter	
Sweep Time	500 ns to 24 h (Time Span)	
Time Resolution	Selectable from 31,25 ns up to 90 min	
Resolution bandwidth RBW (-6 dB)	40 kHz to 32 MHz (10 steps per decade)	
Measurement range setting (MR Range)	Set individually from a list or using the "MR Search" function for determining the optimum measurement range at a given time	
Video bandwidth (VBW)	4 Hz to 32 MHz (depending on the selected RBW)	
Result Type	ACT: Displays the instantaneous (actual) value. If time resolution = $\frac{1}{RBW}$ Standard: Displays the selected safety standard. or MAX: Maximum value within the time resolution interval (corresponds to peak detector). AVG: Average value within the time resolution interval (corresponds to RMS detector). MIN: Minimum value within the time resolution interval. Standard: Displays the selected safety standard.	
Marker function	Delta marker, Marker, highest peak, next peak right, next peak left, next highest peak, next lowest peak	
Evaluation functions	Duty cycle (ratio of average power to maximum power)	
Triggering	Programmable Trigger Delay, Trigger Edge and Trigger Level	
Trigger Functionality	Free run	Time signal runs continuously.
	Single Level	Entering a Trigger Level, Trigger Delay, and Trigger Edge displays the signal at precisely this instant in time.
	Multiple Level	Single level run several times consecutively.
	Manual Start	Time signals displayed instant by a button.
	Time Controlled	Time signals runs instant by date and time.
Axis	Measurement in the direction of the X, Y, and Z axis (separate measurement in one direction using an isotropic / three-axis measuring antenna)	
Extras (Transfer Parameters)	"Go to ... " transfers the Center Frequency and RBW to other operating modes Selection of individual services allows "zapping" through a service table	

MEASUREMENT FUNCTIONS		
Detection of Narda measurement antennas	Automatic consideration of antenna parameters after antenna is plugged in: antenna type, serial number, calibration date and antenna factors (see below) Automatic limitation of the frequency range according to the frequency range of the connected antenna	
Antenna factors	Used for display in field strength units Saved in all Narda antennas during calibration Antenna factor lists for antennas from other manufacturers can be saved (these lists defined using the PC configuration software SRM-3006 Tools)	
Detection of Narda Cables	Automatic consideration of cable parameters after cable is plugged in: Cable type, serial number, calibration date and loss factors (see below) Automatic limitation of the frequency range according to the frequency range of the connected cable	
Cable loss factors	Used for compensation of the power level display Saved in all Narda cables during calibration Cable loss lists for cables from other manufacturers can be saved (these lists defined using the PC configuration software SRM-3006 Tools included in delivery)	
Units	With Antenna % of the standard, V/m, A/m, W/m ² , mW/cm ² , dBV/m, dBmV/m, dBA/m, dBμV/m, Without Antenna dBm, dBV, dBmV, dBμV	
Isotropic Measurements	Automatic switching of the antenna axes when using Narda's three axis measurement antenna followed by computation of the isotropic result Sequential measurements using single-axis antennas with subsequent computation of the isotropic result are supported. Both results are directly displayed as a spectrum curve or as numerical values	
Weighted Display	In % of the standard for the following human safety standards: ICNIRP, IEEE, FCC etc. Updating for new human safety standards can be made using the PC configuration software SRM-3006 Tools included in delivery)	
Correlation of results with telecom service	Definition and editing of service tables with the PC configuration software SRM-3006 Tools, i.e. lists of frequency bands (upper and lower limit frequency, name for defined frequency band) Storage of service tables in the basic unit Use of the service tables for automatic correlation of measurement results with defined services based on frequency (marker functions, peak table evaluation function, Safety Evaluation mode)	
Setups	Complete device configurations can be saved in the basic unit; up- and downloadable using SRM-3006 Tools software.	
Measurement Routines	Programmable sequences of setups	
Memory	Memory modes	Result stored as: Spectrum in Spectrum Analysis mode(SPECTRUM), Table in Safety Evaluation mode (SAFETY), Values in UMTS P-CPICH Demodulation mode (UMTS) Values for Level Recorder (LEVEL) and Scope (SCOPE)
	Conditional Storing	Conditional storing of results exceeding a specified threshold value (in all operating modes except "Scope") with individual storage rates and reset function
	Time Controlled Storing	Timer controlled storage of results for long term monitoring (in all operating modes except "Scope") with individual storage rates and reset function Start date and start time settable with a resolution of one second Measurement duration settable from 1 second to 99 hours in 1 second steps Storage rate settable to every 1.2 s, 2.4 s, 3.6 s, 6 s, 12 s, 18 s, 30 s, 1 min, 2 min, 3 min, 5 min, 6 min, 10 min, 15 min, 20 min, 30 min Reset function for automatically resetting the stored maximum values, either after every result save (Always), or when the measurement starts (On start), or never (Never)
	Memory capacity	128 MB (up to 8000 spectra, 4000 screen shots)
Hold	"Freezes" the display; the measurement continues in the background.	
Multilingual	English (Default), French, Spanish, Turkish, Simplified Chinese	

GENERAL SPECIFICATIONS		
Operating temperature range		-10 °C to +50 °C during normal operation 0 °C to +40 °C when charging
Compliance	Climatic	Storage 1K3 (IEC 60721-3) extended to -10 °C to +50 °C
		Transport 2K4 (IEC 60721-3) restricted -30°C to+ 70°C due to display
		Operating 7K2 (IEC 60721-3) extended to -10 °C to +50 °C
	Mechanical	Storage 1M3 (IEC 60721-3)
		Transport 2M3 (IEC 60721-3)
		Operating 7M3 (IEC 60721-3)
	ESD and EMC	EN 61326 -1 : 2006
	Safety	EN 61010-1:2004
EU Guidelines	2003/11/EG 06.02.2003 (PBDE and OBDE) 2002/95/EG 27.01.2003 (RoHS) 2002/96/EG 27.01.2003 (WEEE)	
CE (European Community)		Yes
RF Immunity		200 V/m
Dust and water resistance		IP 52 (with antenna attached and interface protector closed)
Air humidity (operating range) RF		< 29 g/m ³ (< 93 % at +30 °C)
Weight		2,8 kg (including rechargeable cell)
Dimensions		297 x 213 x 77 mm
Display	Type	Color display TFT-LCD With backlight, for indoor and outdoor use
	Size, resolution	152 x 91 mm (7 Inch) , 800 x 480 pixels
Interface		USB mini B (USB 2.0)
		Optical RS 232 (Baud rate 115 200)
		Earphone 3.5 mm TRS
Power supply	Rechargeable cell	Lithium-Ion rechargeable battery – typical 2.5 hour operating time Charged using external power supply
	External power supply (12 V DC / 2,5 A)	AC/DC-Adapter (DIN 45323) Input: 9 to 15 V
Recommended calibration interval		24 months
Country of origin		Germany

PRODUCT INFORMATION ISOTROPIC ANTENNAS

Three axis antenna (E-Field) 3501/03

Frequency range	27 MHz to 3 GHz The correction factors determined individually during calibration are stored in an EEPROM and are applied automatically when used in conjunction with the SRM basic unit.
Antenna type	E-field
Sensor type	Three axis design with scanned axes
Dynamic range ^a	0.2 mV/m to 200 V/m
CW damage level	435 V/m or 50 mW/cm ²
Intrinsic noise display in conjunction with the SRM basic unit (separate measurement of a single axis) ^b	25 µV/m at 900 MHz with RBW = 1 kHz 40 µV/m at 2.1 GHz with RBW = 1 kHz
Intrinsic noise display in conjunction with the SRM basic unit (for isotropic result) ^b	40 µV/m at 900 MHz with RBW = 1 kHz 70 µV/m at 2.1 GHz with RBW = 1 kHz
Measurement range limit (for single CW signal)	300 V/m 1000 V/m for $f \leq 110$ MHz
Max. measurement range (in conjunction with the SRM basic unit) ^b	200 V/m (without restrictions for total span of 27 MHz to 3 GHz)
RF connector	N connector, 50 Ω

MEASUREMENT UNCERTAINTY

Extended measurement uncertainty ^c (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single axis measurement with isotropic antenna	Isotropic measurement
		27 – 85 MHz	+2.4 / -3.3 dB
	> 85–900 MHz	+2.4 / -3.4 dB	+2.5 / -3.6 dB
	> 900-1400 MHz	+2.3 / -3.1 dB	+2.5 / -3.4 dB
	> 1400-1600 MHz	+2.3 / -3.1 dB	+2.6 / -3.8 dB
	> 1600-1800 MHz	+1.8 / -2.3 dB	+2.2 / -3.0 dB
	> 1800-2200 MHz	+1.8 / -2.3 dB	+2.4 / -3.3 dB
	> 2200-2700 MHz	+1.9 / -2.4 dB	+2.7 / -3.8 dB
	> 2700-3000 MHz	+1.9 / -2.4 dB	+3.3 / -5.3 dB
Calibration uncertainty	< 1.5 dB		

GENERAL SPECIFICATIONS

Operating temperature range	-10 °C to +50 °C same as SRM basic unit		
RF immunity	200 V/m between 27 MHz and 3 GHz		
Compliance	Climatic	Storage	1K3 (IEC 60721-3) extended to -10 °C to +50 °C
		Transport	2K4 (IEC 60721-3)
		Operating	7K2 (IEC 60721-3)
	Mechanical	Storage	1M3 (IEC 60721-3)
		Transport	2M3 (IEC 60721-3)
		Operating	7M3 (IEC 60721-3)
	ESD and EMC	EN 61326:2006	
	Safety	EN 61010-1:2004	
	EU Guidelines	2003/11/EG 06.02.2003 (PBDE and OBDE) 2002/95/EG 27.01.2003 (RoHS), 2002/96/EG 27.01.2003 (WEEE)	
CE (European Community)	Yes		
Air humidity	< 29 g/m ³ (< 93 % at +30 °C)		
Weight	450 g		
Dimensions	450 mm length; 120 mm antenna head diameter		
Calibration	20 reference points: 26; 45; 75; 100; 200; 300; 433; 600; 750; 900 MHz 1; 1,2; 1,4; 1,6; 1,8; 2; 2,2; 2,45; 2,7; 3 GHz The SRM basic unit applies linear interpolation between reference points		
Recommended calibration interval	24 months		
Country of origin	Germany		

^a Typical measurement dynamic range for 10 dB signal to noise ratio (RBW = 1 kHz); 800 MHz to 1.8 GHz

^b Typical values

^c Typical value, with $k = 2$ (k = extrapolation or correction factor for calculating the assessment value); +15 °C to +30 °C

Three axis antenna (E-Field) 3502/01			
Frequency range	420 MHz to 6 GHz The correction factors determined individually during calibration are stored in an EEPROM and are applied automatically when used in conjunction with the SRM basic unit.		
Antenna type	E-field		
Sensor type	Three axis design with scanned axes		
Dynamic range ^a	0.14 mV/m to 160 V/m		
CW damage level	435 V/m or 50 mW/cm ²		
Intrinsic noise display in conjunction with the SRM basic unit (separate measurement of a single axis) ^b	33 µV/m at 900 MHz with RBW = 1 kHz 25 µV/m at 2.1 GHz with RBW = 1 kHz		
Intrinsic noise display in conjunction with the SRM basic unit (for isotropic result) ^b	60 µV/m at 900 MHz with RBW = 1 kHz 43 µV/m at 2.1 GHz with RBW = 1 kHz		
Measurement range limit (for single CW signal)	200 V/m		
Max. measurement range (in conjunction with the SRM basic unit) ^b	160 V/m (without restrictions for total span of 420 MHz to 6 GHz)		
RF connector	N-Connector, 50 Ω		
MEASUREMENT UNCERTAINTY			
Extended measurement uncertainty ^c (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single axis measurement with isotropic antenna	Isotropic measurement
	420-750 MHz	+2.1 / -2.9 dB	+2.6 / -3.8 dB
	> 750-1600 MHz	+2.0 / -2.7 dB	+2.2 / -2.9 dB
	> 1600-2000 MHz	+1.7 / -2.2 dB	+1.9 / -2.4 dB
	> 2000-4000 MHz	+1.7 / -2.2 dB	+2.0 / -2.6 dB
	> 4000-4500 MHz	+1.8 / -2.3 dB	+2.2 / -3.0 dB
	> 4500-5000 MHz	+1.9 / -2.5 dB	+2.5 / -3.5 dB
> 5000-6000 MHz	+1.9 / -2.5 dB	+2.9 / -4.3 dB	
Calibration uncertainty	< 1.5 dB		
GENERAL SPECIFICATIONS			
Operating temperature range	-10 °C to +50 °C same as SRM basic unit		
RF immunity	200 V/m		
Compliance	Climatic	Storage	1K3 (IEC 60721-3) extended to -10 °C to +50 °C
		Transport	2K4 (IEC 60721-3)
		Operation	7K2 (IEC 60721-3)
	Mechanical	Storage	1M3 (IEC 60721-3)
		Transport	2M3 (IEC 60721-3)
		Operation	7M3 (IEC 60721-3)
	ESD and EMC	EN 61326:2006	
	Safety	EN 61010-1:2004	
	EU Guidelines	2003/11/EG 06.02.2003 (PBDE and OBDE) 2002/95/EG 27.01.2003 (RoHS), 2002/96/EG 27.01.2003 (WEEE)	
	CE (European Community)	Yes	
Air humidity	< 29 g/m ³ (< 93 % at +30 °C)		
Weight	400 g		
Dimensions	450 mm length; 120 mm antenna head diameter		
Calibration	21 reference points: 420 MHz, 600 MHz, 750 MHz; 900 MHz 1; 1.2; 1.4; 1.6; 1.8; 2; 2.2; 2.45; 2.7; 3; 3.5; 4; 4.5; 5; 5.5; 5.8; 6 GHz The SRM basic unit applies linear interpolation between reference points.		
Recommended calibration interval	24 months		
Country of origin	Germany		

^a Typical measurement dynamic range for 10 dB signal to noise ratio (RBW = 1 kHz); 1.8 to 2.2 GHz

^b Typical values

^c Typical value, with k = 2 (k = extrapolation or correction factor for calculating the assessment value); +15 °C to +30 °C

Three axis antenna (H-Field) 3581/02			
Frequency range	9 kHz to 250 MHz The correction factors determined individually during calibration are stored in an EEPROM and are applied automatically when used in conjunction with the SRM basic unit.		
Antenna type	H-Field		
Sensor type	Triaxial active magnetic loop design with scanned axes		
Dynamic range ^a	2.5 μ A/m to 560 mA/m		
CW damage level	250 A/m / f [MHz]		
Max. measurement range (in conjunction with the SRM basic unit) ^b	560 mA/m		
Intrinsic noise display in conjunction with the SRM basic unit (separate measurement of a single axis)	0.5 μ A/m for each frequency > 1 MHz with RBW = 1 kHz		
Intrinsic noise display in conjunction with the SRM basic unit (for isotropic result)	0.85 μ A/m > 1 MHz with RBW = 1 kHz		
RF connector ^c	N-Connector, 50 Ω		
Measurement uncertainty			
Extended measurement uncertainty ^c (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single axis measurement with isotropic antenna	Isotropic measurement
	0.009 - 60 MHz	2.2 dB	2.5 dB
	> 60 - 250 MHz	2.3 dB	3.3 dB
Calibration uncertainty	< 1.5 dB		
GENERAL SPECIFICATIONS			
Operating temperature range	-10 °C to +50 °C same as SRM basic unit		
Immunity	200 V/m between 9 kHz and 250 MHz		
Compliance	Climatic	Storage	1K3 (IEC 60721-3) extended to -10 °C to +50 °C
		Transport	2K4 (IEC 60721-3)
		Operating	7K2 (IEC 60721-3)
	Mechanical	Storage	1M3 (IEC 60721-3)
		Transport	2M3 (IEC 60721-3)
		Operating	7M3 (IEC 60721-3)
	ESD and EMC	EN 61326:2006	
	Safety	EN 61010-1:2004	
	EU Guidelines	2003/11/EG 06.02.2003 (PBDE and OBDE) 2002/95/EG 27.01.2003 (RoHS) 2002/96/EG 27.01.2003 (WEEE)	
	CE (European Community)	Yes	
Air humidity	< 29 g/m ³ (< 93 % at +30 °C)		
Weight	470 g		
Dimensions	450 mm length; 120 mm antenna head diameter		
Calibration	178 reference points The SRM basic unit applies linear interpolation between reference points.		
Recommended calibration interval	24 months		
Country of origin	Germany		
^a Typical measurement dynamic range for 10 dB signal to noise ratio (RBW = 1 kHz) in frequency range 3 MHz to 250 MHz ^b Typical values ^c Typical value, with k = 2 (k = extrapolation or correction factor for calculating the assessment value); +15 °C to +30 °C			

PRODUCT INFORMATION SINGLE-AXIS ANTENNAS

Single-axis antenna (E-field) 3531 / 01

Frequency range	27 MHz to 3 GHz The correction factors determined individually during calibration are stored in an EEPROM and are applied automatically when used in conjunction with the SRM basic unit.
Antenna type	E-Field
Sensor type	Single axis passive wide band dipole
Dynamic range ^a	60 µV/m to 160 V/m
CW damage level	> 300 V/m or 25 m/Wcm ²
Intrinsic noise display in conjunction with	20 µV/m from 100 MHz to 2.2 GHz with RBW = 1 kHz
Measurement range limit	160 V/m
RF connector	N connector, 50 Ω

UNCERTAINTY

Extended measurement uncertainty ^d (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single-axis measurement
		26 - 300 MHz
	> 301 - 433 MHz	2.4 dB
	> 434 - 1600 MHz	2.2 dB
	> 1601 - 3000 MHz	1.9 dB
Calibration uncertainty	< 1.5 dB	

GENERAL SPECIFICATIONS

Operating temperature range	-10 °C to 50 °C (same as SRM basic unit)		
Compliance	Climatic	Storage	1K3 (IEC 60721-3) extended to -10°C to +50°C
		Transport	2K4 (IEC 60721-3)
		Operating	7K2 (IEC 60721-3)
	Mechanical	Storage	1M3 (IEC 60721-3)
		Transport	2M3 (IEC 60721-3)
		Operating	7M3 (IEC 60721-3)
	ESD and EMC	EN 61326:2006	
	Safety	EN 61010-1:2004	
	EU Guidelines	2003/11/EG 06.02.2003 (PBDE and OBDE) 2002/95/EG 27.01.2003 (RoHS) 2002/96/EG 27.01.2003 (WEEE)	
	CE (European Community)	Yes	
Air humidity	< 29 g/m ³ (< 93 % to +30 °C)		
Weight	450 g		
Dimensions	460 mm length; 135 x 90 mm antenna head dimensions		
Calibration	24 reference points 26, 30, 40, 50, 60, 75, 100, 200, 300, 433, 600, 750, 900 MHz 1, 1.2, 1.4, 1.6, 1.8, 2, 2.2, 2.45, 2.6, 2.8, 3 GHz The SRM applies linear interpolation between reference points.		
Recommended calibration interval	24 months		
Country of origin	Germany		

a Typical measurement dynamic range for 10 dB signal to noise ratio (RBW = 1 kHz); 100 MHz – 2.2 GHz

b Typical values

c Typical value, with k = 2 (k = extrapolation or correction factor for determining the assessment value); +15 °C to +30 °C

Single axis antenna (E-field) 3531/04			
Frequency range	9 kHz to 300 MHz The correction factors determined individually during calibration are stored in an EEPROM and are applied automatically when used in conjunction with the SRM basic unit.		
Antenna type	E-field		
Sensor type	Single axis active broadband dipole		
Dynamic range ^a	50 µV/m to 16 V/m for 300 kHz to 10 MHz 50 µV/m to 36 V/m for > 10 MHz to 300 MHz		
CW damage level	> 1000 V/m		
Intrinsic noise display in conjunction with the SRM basic unit ^b	20 µV/m for each frequency > 1 MHz with RBW = 1 kHz		
Measurement range limit (for single CW signal) ^b	50 V/m		
RF connector	N connector, 50 Ω		
UNCERTAINTY			
Extended measurement uncertainty ^c , (in conjunction with SRM basic unit and 1.5 m cable)	Frequency range	Single-axis measurement	
		0.009 - 300 MHz	2.0 dB
Calibration uncertainty	< 1.2 dB		
GENERAL SPECIFICATIONS			
Operating temperature range	-10 °C to 50 °C (same as SRM basic unit)		
Compliance	Climatic	Storage	1K3 (IEC 60721-3) extended to -10 °C to +50 °C
		Transport	2K4 (IEC 60721-3)
		Operating	7K2 (IEC 60721-3)
	Mechanical	Storage	1M3 (IEC 60721-3)
		Transport	2M3 (IEC 60721-3)
		Operating	7M3 (IEC 60721-3)
	ESD and EMC	EN 61326:2006	
	Safety	EN 61010-1:2004	
	EU Guidelines	2003/11/EG 06.02.2003 (PBDE and OBDE) 2002/95/EG 27.01.2003 (RoHS) 2002/96/EG 27.01.2003 (WEEE)	
	CE (European Community)	Yes	
Air humidity	< 29 g/m ³ (< 93 % to +30 °C)		
Weight	550 g		
Dimensions	460 mm length; 135 x 90 mm antenna head dimension		
Calibration	183 reference points The SRM applies linear interpolation between reference points.		
Recommended calibration interval	24 months		
Country of origin	Germany		
^a Typical measurement dynamic range for 10 dB signal to noise ratio (RBW = 1 kHz) ^b Typical values ^c Typical value, with k = 2 (k = extrapolation or correction factor for determining the assessment value); +15 °C to +30 °C			

Single-axis antenna (H-field) 3551/02			
Frequency range	9 kHz to 300 MHz The correction factors determined individually during calibration are stored in an EEPROM and are applied automatically when used in conjunction with the SRM basic unit.		
Antenna type	H-field		
Sensor type	Single axis active magnetic loop		
Dynamic range ^a	0.4 µA/m to 71 mA/m		
CW damage level	> 2.65 A/m above 1 MHz		
Intrinsic noise display in conjunction with the SRM basic unit ^b	0.12 µA/m for each frequency > 10 MHz with RBW = 1 kHz		
Measurement range limit (for single CW signal) ^b	100 mA/m		
RF connector	N connector, 50 Ω		
UNCERTAINTY			
Extended measurement uncertainty ^c (in conjunction with SRM basic unit and 1.5 m cable)	Frequency range	Single-axis measurement	
		0.009 – 1 MHz > 1 - 300 MHz	2.0 dB 1.8 dB
Calibration uncertainty	< 1.2 dB		
GENERAL SPECIFICATION			
Operating temperature range	-10 °C to 50 °C (same as SRM basic unit)		
Compliance	Climatic	Storage	1K3 (IEC 60721-3) extended to -10 °C to +50 °C
		Transport	2K4 (IEC 60721-3)
		Operating	7K2 (IEC 60721-3)
	Mechanical	Storage	1M3 (IEC 60721-3)
		Transport	2M3 (IEC 60721-3)
		Operating	7M3 (IEC 60721-3)
	ESD and EMC	EN 61326:2006	
	Safety	EN 61010-1:2004	
	EU Guidelines	2003/11/EG 06.02.2003 (PBDE and OBDE) 2002/95/EG 27.01.2003 (RoHS) 2002/96/EG 27.01.2003 (WEEE)	
	CE (European Community)	Yes	
Air humidity	< 29 g/m ³ (< 93 % at +30 °C)		
Weight	450 g		
Dimensions	460 mm length; 43 x 100 mm antenna head dimension		
Calibration	183 reference points The SRM interpolates between reference points		
Recommended calibration interval	24 months		
Country of origin	Germany		
^a Typical measurement dynamic range for 10 dB signal to noise ratio (RBW = 1 kHz); for frequencies > 10 MHz ^b Typical values ^c Typical value, with k = 2 (k = extrapolation or correction factor for determining the assessment value); +15 °C to +30 °C			

ORDERING INFORMATION

SRM – Set Overview	
SRM-3006, Selective Radiation Meter, Set 1/2, Basic Unit, no Antenna Set comprising: <ul style="list-style-type: none"> - Selective Radiation Meter, Basic Unit, SRM-3006 - RF-Cable SRM, 9kHz-6GHz, N 50 Ohm, 1,5m (3602/01) - Carrying Strap for SRM (Basic Unit) (3001/90.02) - Holding Strap for SRM-3006 Basic Unit (3001/90.12) - Operating Manual SRM, German / English (please select) - Power Supply 12VDC, 100V-240VAC, all Plugs (2259/92.04) - Software, SRM-3006 Tools (3006/93.01) - Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55) 	Choice of set container: Hardcase 3006/101 Softcase 3006/102
SRM-3006, Selective Radiation Meter, Set 3/4, Basic Unit plus one Isotropic Antenna (420MHz-6GHz) Set comprising: <ul style="list-style-type: none"> - Selective Radiation Meter, Basic Unit, SRM-3006 - Antenna, Three-Axis, E-Field, 420 MHz-6GHz (3502/01) - RF-Cable SRM, 9kHz-6GHz, N 50 Ohm, 1,5m (3602/01) - Carrying Strap for SRM (Basic Unit) (3001/90.02) - Holding Strap for SRM-3006 Basic Unit (3001/90.12) - Operating Manual SRM, German / English (please select) - Power Supply 12VDC, 100V-240VAC, all Plugs (2259/92.04) - Software, SRM-3006 Tools (3006/93.01) - Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55) 	Choice of set container: Hardcase 3006/103 Softcase 3006/104
SRM-3006, Selective Radiation Meter, Set 5/6, Basic Unit plus two Isotropic Antennas Set comprising: <ul style="list-style-type: none"> - Selective Radiation Meter, Basic Unit, SRM-3006 - Antenna, Three-Axis, E-Field, 420 MHz-6GHz (3502/01) - Antenna, Three-Axis, E-Field, 27 MHz-3GHz (3501/03) - RF-Cable SRM, 9kHz-6GHz, N 50 Ohm, 1,5m (3602/01) - Carrying Strap for SRM (Basic Unit) (3001/90.02) - Holding Strap for SRM-3006 Basic Unit (3001/90.12) - Operating Manual SRM, German / English (please select) - Power Supply 12VDC, 100V-240VAC, all Plugs (2259/92.04) - Software, SRM-3006 Tools (3006/93.01) - Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55) 	Choice of set container: Hardcase 3006/105 Softcase 3006/106
SRM-3006, Selective Radiation Meter, Set 7/8, Basic Unit plus one Isotropic Antenna (27MHz-3GHz) Set comprising: <ul style="list-style-type: none"> - Selective Radiation Meter, Basic Unit, SRM-3006 - Antenna, Three-Axis, E-Field, 27MHz-3GHz (3501/03) - RF-Cable SRM, 9kHz-6GHz, N 50 Ohm, 1,5m (3602/01) - Carrying Strap for SRM (Basic Unit) (3001/90.02) - Holding Strap for SRM-3006 Basic Unit (3001/90.12) - Operating Manual SRM, German / English (please select) - Power Supply 12VDC, 100V-240VAC, all Plugs (2259/92.04) - Software, SRM-3006 Tools (3006/93.01) - Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55) 	Choice of set container: Hardcase 3006/107 Softcase 3006/108

ORDERING INFORMATION

OPTIONAL ANTENNAS	
Antenna, Three-Axis, E-Field, 27 MHz - 3 GHz	3501/03
Antenna, Three-Axis, E-Field, 420 MHz - 6 GHz	3502/01
Antenna, Three-Axis, H-Field, 9 kHz - 250 MHz	3581/02
Antenna, Single-Axis, E-Field, 27MHz - 3 GHz	3531/01
Antenna, Single-Axis, E-Field, 9 kHz - 300 MHz	3531/04
Antenna, Single-Axis, H-Field, 9 kHz - 300 MHz	3551/02
OPTIONS	
Option, UMTS P-CPICH Demodulation SRM-3006	3701/04
Option, Scope	3701/05
ACCESSORIES	
RF-Cable SRM, 9kHz-6GHz, N 50 Ohm, 5m	3602/02
Antenna Holder for Uniaxial/Triaxial Antenna	3501/90.01
Antenna Holder for Triaxial Antenna	3501/90.02
Battery Pack, Rechargeable, SRM, 7V4 / 5100 mAh	3001/90.01
Tripod, Non conductive, 1,65 m, with carrying bag	2244/90.31
Charger Set for SRM Battery Pack, External	3001/90.07
Softcase for SRM	3001/90.05
Hardcase for SRM	3001/90.03
Protective Soft Carrying Bag for SRM-3006 Basic Unit	3001/90.13
Earphone, 3.5mm Plug	2400/90.03
O/E Converter USB, RP-02/USB	2260/90.07

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