

# Selective Radiation Meter SRM-3006



## Selective measurement of high frequency electromagnetic fields

Compact, easy to use measuring system, consisting of basic unit, cable and measuring antennas, for isotropic (non-directional) measurement of electro-magnetic fields and their sources in the frequency range from 9 kHz to 6 GHz

- › Code selective EMF measurement of 5G NR signals
- › Measurements conforming to ICNIRP and national standards with results displayed directly in terms of the permitted limit value
- › Fast, reliable results using predefined measurement routines, setups, and automatic settings
- › Extrapolation to maximum exposure levels and evaluating pilot signal information with LTE - FDD/TDD and UMTS operating modes
- › Scope mode for short term analysis of pulsed signals and long term recording of variable exposure levels
- › Editable tables for automatic correlation of results with telecommunications services
- › Individual preparation of field campaigns with 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



## 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, UMTS, LTE and 5G. 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.



# Definitions and conditions

## Conditions

Unless otherwise noted, specifications apply after 30 minutes warm-up time within the specified environmental conditions. The product is within the recommended calibration cycle.

## Specifications with limits

These describe product performance for the given parameter covered by warranty. Specifications with limits (shown as  $<$ ,  $\leq$ ,  $>$ ,  $\geq$ ,  $\pm$ , max., min.) apply under the given conditions for the product and are tested during production, considering measurement uncertainty.

## Specifications without limits

These describe product performance for the given parameter covered by warranty. Specifications without limits represent values with negligible deviations, which are ensured by design (e.g. dimensions or resolution of a setting parameter).

## Typical values (typ.)

These characterize product performance for the given parameter that is not covered by warranty. When stated as a range or as a limit (shown as  $<$ ,  $\leq$ ,  $>$ ,  $\geq$ ,  $\pm$ , max., min.), they represent the performance met by approximately 80% of the instruments. Otherwise, they represent the mean value. The measurement uncertainty is not taken into account.

## Nominal values (nom.)

These characterize expected product performance for the given parameter that is not covered by warranty. Nominal values are verified during product development but are not tested during production.

## Uncertainties

These characterize the dispersion of the values attributed to the measurands with an estimated confidence level of approximately 95%. Uncertainty is stated as the standard uncertainty multiplied by the coverage factor  $k=2$  based on the normal distribution. The evaluation has been carried out in accordance with the rules of the "Guide to the Expression of Uncertainty in Measurement" (GUM).

# Specifications - Basic Unit SRM-3006

RF Data <sup>a</sup>				
Frequency	Frequency range	9 kHz to 6 GHz		
	Resolution bandwidth (RBW)	See specifications for each mode		
	Phase noise (SSB)	< -100 dBc/Hz (@ 300 kHz carrier offset)	verified at (57.5 / 2140.5 / 4500.5) MHz	
	Reference frequency	Initial deviation	< 1 ppm	
		Aging	< 1 ppm/year, < 5 ppm over 15 years	
Thermal drift		< 1.5 ppm (-10 °C to +50 °C)		
Amplitude	Display range	From Displayed Average Noise Level (DANL) to +20 dBm		
	Measurement range (MR)	-30 dBm to +20 dBm in steps of 1 dB		
	RF Input attenuation	0 to 50 dB in steps of 1 dB (coupled with measurement range MR)		
	Measurement range setting	Set individually from a list or using the "MR Search" function for determining the optimum measurement range at a given time		
	Level uncertainty	≤ 1.2 dB (15 °C to 30 °C)		
	Displayed Average Noise Level (DANL)	f ≤ 30 MHz:	< -160 dBm/Hz (noise figure < 14 dB)	MR = -30 dBm (RF input attenuation = 0 dB)
		f ≤ 2 GHz:	< -156 dBm/Hz (noise figure < 18 dB)	
		f ≤ 4 GHz:	< -155 dBm/Hz (noise figure < 19 dB)	
		f ≤ 6 GHz:	< -150 dBm/Hz (noise figure < 24 dB)	
3 <sup>rd</sup> order intermodulation	< -60 dBc for two single tones with a level of 6 dB below MR, spaced by 1 MHz or more			
Spurious responses (input related)	< -60 dBc or MR-60 dB (whichever is worse) and a carrier offset of 1 MHz or more			
Spurious responses (residual)	< -90 dBm (MR = -30 dBm, RF input attenuation = 0 dB) For (294 to 306) MHz and (4534 to 4586) MHz limited to < -85 dBm			
RF input	Type	N-Connector, 50 Ω, female		
	Maximum RF power level	+27 dBm (destruction limit)		
	Maximum DC voltage	±50 V		
	Return loss	f ≤ 4.5 GHz	> 12 dB (typ.)	MR ≥ -28 dBm (RF input attenuation ≥ 2 dB)
f > 4.5 GHz		> 10 dB (typ.)		

<sup>a</sup> RF data apply in the temperature range of 20°C to 26°C and a relative humidity between 25 % and 75 %.

Mode spectrum analysis		
Measurement principle	Spectrum analysis	
Resolution bandwidth RBW, (-3 dB nominal)	10 Hz to 20 MHz (in steps of 1, 2, 3, 5, 10, 20, ...)	
Video bandwidth VBW	Off, 0.2 Hz to 2 MHz (in steps of 1, 2, 3, 5, 10, 20, ... coupled with selected RBW)	
Filter	Type	Gaussian
	Shape factor (-60 dB/ -3 dB)	3.8 typical
Result types	Individually selectable traces for: 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 of 1 to 30 minutes Max Avg: Maximum hold function after averaging Min: Minimum hold function Min Avg: Minimum hold function after averaging Standard: Display of the selected safety standard SAVG: Spatial Averaging; Types: „continuous“ or „discrete“	
Marker functions	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. Delta marker to measure difference in level and frequency of the same trace or to display the difference between two different traces e.g. average and maximum at the same frequency.	
Evaluation functions	Peak table (list of up to 50 highest peaks) Integration over a user-specified frequency range (channel power)	
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements	
Display functions	Y-scale range:	20, 40, 60, 80, 100 or 120 dB
	Y-scale reference:	MR-100 dB to MR+20 dB (-130 dBm to +40 dBm)
	Screen arrangement:	help line, status lines on/off
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 of parameters)	“Go to: <i>mode</i> “ changes the operating mode with automatic parameter transfer for Fcent and Fspan. “Select Service“ allows easy frequency settings by means of predefined service tables	

<b>Mode safety evaluation</b>	
Measurement principle	Spectrum analysis, followed by integration over user-defined frequency bands ("services")
Number of services	1 to 500, predefined by service tables on the instrument or created by PC software SRM-3006 Tools
Name of services	User definable, maximum 15 characters set by PC software SRM-3006 Tools
Channel bandwidth of a service (CBW)	Individually selectable for each channel, from 40 Hz to 6 GHz
Resolution bandwidth RBW, (-3 dB nominal)	Available bandwidths as for Spectrum Analysis mode. The following condition applies: $RBW \leq CBW_{(\text{narrowest service})} / 4$ Automatic: RBW setting depending on of the narrowest service Manual: can be set in the range of available RBWs Individual: separately defined for each individual service by PC software SRM-3006 Tools ("Others" needs to be switched off)
Detection	Root mean square value (RMS), integration time = 1 / RBW
Filter	See Spectrum Analysis mode
Result types	See Spectrum Analysis mode
Marker functions for bar graph view	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. Delta marker to measure difference in level and frequency of the same trace or to display the difference between two different traces (Result Types) at the same frequency.
Evaluation function	Distribution (percentage contribution of each service)
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements
Display functions	Table view showing service names, the corresponding frequency bands, field strength per result type and RBW (when set to individual) Screen arrangement: help line, status lines on/off Sort function according to various criteria Bar graph of services showing contribution of the selected Result Types
Noise threshold	Displays results only if they are above the typical noise floor when activated. The threshold is selectable (0, 3, 6, 10, 15, or 20 dB relative to the typical DANL). Measurement values below the threshold are shown as the absolute threshold value marked with "<" (less than threshold)
Others On/Off	Others On: field strength in the frequency gaps between the specified services is measured Others Off: field strength in the frequency gaps between the specified services is ignored
Extras (transfer of parameters)	"Go to: mode" changes the operating mode with automatic parameter transfer for Fcent and Fspan. „Select Service Table“ allows switching between predefined service tables



<b>Mode UMTS P-CPICH demodulation (option)</b>		
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)	
Frequency setting resolution	100 kHz (for Fcent frequency entry)	
Resolution bandwidth RBW, (-3 dB nominal)	3.84 MHz (fixed)	
Detection	Root mean square value (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 according EN50492 / IEC 62232	
Result types	Individually selectable for:	
	Act:	Displays instantaneous (actual) channel power
	Max:	Maximum hold function
	Avg:	Average over a selectable number of measurements (4 to 256) or a selectable time period of 1 to 30 minutes
	Max Avg:	Maximum hold function after averaging
	Min:	Minimum hold function
	Min Avg:	Minimum hold function after averaging
	Standard:	Display of the selected safety standard
Evaluation functions	Extrapolation factor adjustable from 1 to 100 in steps of 0.001 Ratio Pilot/Analog in dB	
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements	
Result display	Displayed items	Up to 16 scrambling codes simultaneously
		Selection of individual scrambling codes
		Channel power for the selected Result Types
		Number of measurement runs since last reset
	Table layout	Table format: Index, Scrambling Code, selected result types Total: Total power of all listed scrambling codes Analog: Analog measurement result for the selected UMTS frequency channel (no extrapolation)
Noise threshold	In case of "Analog" results: values are displayed only if they are above the typical noise floor when activated. The threshold is selectable (0, 3, 6, 10, 15, or 20 dB relative to the typical DANL). Measurement values below the threshold are shown as the absolute threshold value marked with "<" (less than threshold)	
Extras (transfer of parameters)	"Go to: <i>mode</i> " changes the operating mode with automatic parameter transfer for Fcent and RBW. "Select Service" allows easy frequency settings by means of predefined service tables	

<b>Mode LTE (for FDD networks) (option)</b>																						
Measurement principle	Power level measurement of the cell specific and traffic independent signals PSS (Primary Sync Signal), SSS (Secondary Sync Signal) and RS (Reference Signal) of LTE cells.																					
LTE channel selection	By entering the center frequency (Fcent)																					
Frequency setting resolution	100 kHz (for Fcent frequency entry)																					
Channel bandwidth CBW, (-6 dB nom.)	Can be set to the following values: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>No. of subcarriers</td> <td>72</td> <td>180</td> <td>300</td> <td>600</td> <td>900</td> <td>1200</td> </tr> <tr> <td>TBW (MHz)</td> <td>1.08</td> <td>2.7</td> <td>4.5</td> <td>9.0</td> <td>13.5</td> <td>18</td> </tr> <tr> <td><b>CBW (MHz)</b></td> <td><b>1.4</b></td> <td><b>3</b></td> <td><b>5</b></td> <td><b>10</b></td> <td><b>15</b></td> <td><b>20</b></td> </tr> </table> <p>Transmit Bandwidth (TBW) is the occupied bandwidth of all subcarriers</p>	No. of subcarriers	72	180	300	600	900	1200	TBW (MHz)	1.08	2.7	4.5	9.0	13.5	18	<b>CBW (MHz)</b>	<b>1.4</b>	<b>3</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>
No. of subcarriers	72	180	300	600	900	1200																
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<b>CBW (MHz)</b>	<b>1.4</b>	<b>3</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>																
Detection	Root mean square value (RMS), integration time = 10 ms (5 ms at CBW 15 MHz, 20 MHz)																					
Filter	Steep cut-off channel filter (app. Raised-Cosine)																					
	Type Roll-off factor																					
	$\alpha = 1 - (TBW/CBW)$																					
Cell specific signals (Signal) <i>Display of the average power level per Resource Element out of all elements of the considered signal</i>	Individually selectable for: PSS (Primary Sync Signal) SSS (Secondary Sync Signal) RS Avg (Reference Signal Average) RS Sum (Reference Signal Sum) RS Max (Reference Signal Maximum) RS 0 (Reference Signal antenna 0) RS 1 (Reference Signal antenna 1) RS 2 (Reference Signal antenna 2) RS 3 (Reference Signal antenna 3)																					
Result types <i>Applicable to all cell specific signals</i>	Individually selectable for: Act: Displays instantaneous (actual) channel power Max: Maximum hold function Avg: Average over a selectable number of measurements (4 to 256) or a selectable time period of 1 to 30 minutes Max Avg: Maximum hold function after averaging Min: Minimum hold function Min Avg: Minimum hold function after averaging Standard: Display of the selected safety standard																					
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements																					
Extrapolation function	Extrapolation factor adjustable from 1 to 10000 in steps of 0.001																					
Result display	Displayed items Selection of individual Cell IDs Number of measurement runs since last reset																					
	Table layout Up to 16 Cell IDs simultaneously Table format: Index, Cell ID, No. Ant. (number of antennas), selected signals shown for each selected result type (up to 54 columns + Standard) Total: Total power of all listed Cell IDs Analog: Analog measurement result for the selected LTE frequency channel (no extrapolation)																					
Setting parameters	Synchronization (Cell Sync): Sync/ No Sync Cyclic Prefix Length (CP Length): Normal/Extended																					
Noise threshold	In case of "Analog" results: values are displayed only if they are above the typical noise floor when activated. The threshold is selectable (0, 3, 6, 10, 15, or 20 dB relative to the typical DANL). Measurement values below the threshold are shown as the absolute threshold value marked with "<" (less than threshold)																					
Extras (transfer of parameters)	"Go to: mode" changes the operating mode with automatic parameter transfer for Fcent and CBW. "Select Service" allows easy frequency settings by means of predefined service tables																					



Mode LTE (for TDD networks) (option)		
Measurement principle	Power level measurement of the cell specific and traffic independent signals PSS (Primary Sync Signal), SSS (Secondary Sync Signal) and RS (Reference Signal) of LTE cells.	
LTE channel selection	By entering the center frequency (Fcent)	
Frequency setting resolution	100 kHz (for Fcent frequency entry)	
Uplink-downlink configuration (3GPP TS 36.211)	Seven uplink-downlink (0-6) configurations according to the standard 3GPP TS 36.211 are supported. To obtain a reliable result the instrument should be adapted to the uplink-downlink configuration of the base station.	
Channel bandwidth CBW, (-6 dB nom.)	Can be set to the following values:	
	No. of subcarriers	72      180      300      600      900      1200
	TBW (MHz)	1.08      2.7      4.5      9.0      13.5      18
	<b>CBW (MHz)</b>	<b>1.4      3      5      10      15      20</b>
Transmit Bandwidth (TBW) is the occupied bandwidth of all subcarriers		
Detection	Root mean square value (RMS), integration time = 10 ms (5 ms at CBW 15 MHz, 20 MHz)	
Filter	Type	Steep cut-off channel filter (app. Raised-Cosine)
	Roll-off factor	$\alpha = 1 - (TBW/CBW)$
Cell specific signals (Signal) <i>Display of the average power level per Resource Element out of all elements of the considered signal</i>	Individually selectable for: PSS (Primary Sync Signal) SSS (Secondary Sync Signal) RS Avg (Reference Signal Average) RS Sum (Reference Signal Sum) RS Max (Reference Signal Maximum) RS 0 (Reference Signal antenna 0) RS 1 (Reference Signal antenna 1) RS 2 (Reference Signal antenna 2) RS 3 (Reference Signal antenna 3)	
Result types <i>Applicable to all cell specific signals</i>	Individually selectable for: Act: Displays instantaneous (actual) channel power Max: Maximum hold function Avg: Average over a selectable number of measurements (4 to 256) or a selectable time period of 1 to 30 minutes Max Avg: Maximum hold function after averaging Min: Minimum hold function Min Avg: Minimum hold function after averaging Standard: Display of the selected safety standard	
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements	
Extrapolation function	Extrapolation factor adjustable from 1 to 10000 in steps of 0.001	
Result display	Displayed items	Selection of individual Cell IDs
		Number of measurement runs since last reset
	Table layout	Up to 16 Cell IDs simultaneously Table format: Index, Cell ID, No. Ant. (number of antennas), selected signals shown for each selected result type (up to 54 columns + Standard)
		Total: Total power of all listed Cell IDs
Analog: Analog measurement result for the selected LTE frequency channel		
Setting parameters	Synchronization (Cell Sync): Sync/ No Sync Cyclic Prefix Length (CP Length): Normal/Extended	
Noise threshold	In case of "Analog" results: values are displayed only if they are above the typical noise floor when activated. The threshold is selectable (0, 3, 6, 10, 15, or 20 dB relative to the typical DANL). Measurement values below the threshold are shown as the absolute threshold value marked with "<" (less than threshold)	
Extras (transfer of parameters)	"Go to: mode" changes the operating mode with automatic parameter transfer for Fcent and CBW. "Select Service" allows easy frequency settings by means of predefined service tables	

Mode 5G NR (option)		
Measurement principle	Code selective power level measurement of the cell specific and traffic independent signals SSS 0 to SSS 7 (Secondary Sync Signal) of 5G cells.	
5G channel selection	By entering the center frequency (Fcent) of the SS/PBCH-Block (SSB)	
Frequency setting resolution	5 kHz	
Subcarrier spacing (SCS)	15 kHz, 30 kHz	
CBW (is set automatically)	CBW = 320 * SCS	
Detection	Root mean square value (RMS), integration time = 10 ms	
Filter	Type	Steep cut-off channel filter (app. Raised-Cosine)
	Roll-off factor	$\alpha = 1 - (TBW/CBW)$
Cell specific signals (Signal) <i>Display of the average power level per Resource Element out of all elements of the considered signal</i>	Individually selectable for: SSS Max (Maximum SSS average power level of SSS 0 to SSS 7) SSS Sum (ERP radiated power per resource element of all SS/PBCH beams summed over SSS 0 to SSS 7) SSS 0 to SSS 7 (Secondary Sync Signal 0 to 7 (depends on the beam configuration of the base station))	
Result types <i>Applicable to all cell specific signals</i>	Individually selectable for: Act: Displays instantaneous (actual) channel power Max: Maximum hold function Avg: Average over a selectable number of measurements (4 to 256) or a selectable time period of 1 to 30 minutes Max Avg: Maximum hold function after averaging Min: Minimum hold function Min Avg: Minimum hold function after averaging Standard: Display of the selected safety standard	
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements	
Result display	Displayed items	Selection of individual Cell IDs
		Number of measurement runs since last reset
	Table layout	Up to 16 Cell IDs simultaneously <b>Table format:</b> Index, Cell ID, No. SSSs, selected signals shown for each selected result type (up to 60 columns + Standard)
		Total: Total power of all listed Cell IDs Analog: Analog measurement result for the selected 5G NR frequency channel
Setting parameters	Sensitivity: Low, Normal und High	
Extras (transfer of parameters)	"Go to: <i>mode</i> " changes the operating mode with automatic parameter transfer for Fcent. "Select Service" allows easy frequency settings by means of predefined service tables	

Level recorder mode	
Measurement principle	Selective level measurement at a fixed frequency setting (Zero Span)
Detection	Peak (holding time 480 ms)
	Root mean square value (RMS), RMS average time adjustable from 480 ms up to 30 min
Filter	Type
	Roll-off factor
Resolution bandwidth RBW (-6 dB nominal)	Steep cut-off channel filter (app. Raised-Cosine) $\alpha = 0.16$
Resolution bandwidth RBW (-6 dB nominal)	100 Hz to 32 MHz (in steps of 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, ..., 10 MHz, 13.333 MHz, 16 MHz, 20 MHz, 26.666 MHz, 32 MHz)
Video bandwidth (VBW)	Off, 0.01 Hz to 32 MHz (depending on the selected RBW)
Result Type	Peak ACT: Displays the actual peak value
	Peak Max: Max hold function for peak values
	RMS ACT: Averaging over a defined time period (0.48 seconds to 30 min)
	RMS Max: Max hold function for RMS values
	SAVG: Spatial Averaging; Types: „continuous“ or „discrete“
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements
Noise threshold	Displays results only if they are above the typical noise floor when activated. The threshold is selectable (0, 3, 6, 10, 15, or 20 dB relative to the typical DANL). 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 of parameters)	“Go to: <i>mode</i> “ changes the operating mode with automatic parameter transfer for Fcent and RBW. “Select Service“ allows easy frequency settings by means of predefined service tables

Scope mode (option)			
Measurement principle	Selective level measurement at a fixed frequency setting (Zero Span)		
Filter	Type	Steep cut-off channel filter (app. Raised-Cosine)	
	Roll-off factor	$\alpha = 0.16$	
Sweep Time	500 ns to 24 h (Time Span)		
Time Resolution	31.25 ns up to 90 min		
Resolution bandwidth RBW (-6 dB nominal)	100 Hz to 32 MHz (see Level Recorder Mode)		
Video bandwidth (VBW)	Off, 0.01 Hz to 32 MHz (depending on the selected RBW)		
Result type	Magnitude Actual (high resolution)	Act:	Displays the instantaneous (actual) value. (time resolution = 1/RBW)
		Standard:	Displays the limit of the selected safety standard
	Magnitude Condensed (long observation)	Magnitude Condensed allows to display the results over a long time period	
		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 limit of 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 Mode	Free Run	Time signal runs continuously.	
	Single	Single triggering as soon as the selected conditions apply for Trigger Level, Trigger Delay, and Trigger Edge	
	Multiple	Same as for Single but with multiple subsequent triggering	
	Manual Start	Time signals displayed instant by a button.	
	Time Controlled	Time signals runs instant by date and time.	
Axis	X, Y, Z axis selection for single-axis measurements using a Narda Three-Axis Antenna or selection of isotropic measurements		
Extras (transfer of parameters)	"Go to: <i>mode</i> " changes the operating mode with automatic parameter transfer for Fcent and RBW. "Select Service" allows easy frequency settings by means of predefined service tables		

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 frequency range adjustment according to the connected antenna
Antenna factors		Used to display measurement results in field strength units Stored in all Narda antennas during calibration Antenna factor lists for antennas from other manufacturers can be created and transferred to the instrument using the PC software SRM-3006 Tools/TS
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 frequency range adjustment according to the connected cable
Cable loss factors		Used for frequency response compensation of the power level display Stored in all Narda cables during calibration Cable loss lists for cables from other manufacturers can be created and transferred to the instrument using the PC software SRM-3006 Tools/TS
Units		With antenna:           % (of the standard), V/m, A/m, W/m <sup>2</sup> , mW/cm <sup>2</sup> , dBV/m, dBmV/m, dBA/m, dBμV/m, dBm, dBV, dBmV, dBμV Without antenna:       dBm, dBV, dBmV, dBμV
Isotropic Measurements		Automatic switching of the antenna axes when using one of Narda's three-axis measurement antennas followed by computation of the isotropic result. Support for sequential measurements using single-axis antennas with subsequent computation of the isotropic result. Both results are directly displayed as a spectrum curve or as numerical values
Weighted Display		In % of standard for human safety standards like ICNIRP, IEEE, FCC etc. New lists of exposure limits can be created and transferred to the instrument using the PC software SRM-3006 Tools/TS
Correlation of results with telecom services		Service Tables specify the used frequency band, the name and the required resolution bandwidth (RBW) of up to 500 individual services in a single list. Thus measurement results can be easily assigned to a service even without the knowledge of the frequency (marker functions, peak table evaluation function, Safety Evaluation mode).  Service Tables can be created either directly on the instrument or conveniently created and transferred to the instrument using the PC software SRM-3006 Tools/TS
Setups		Complete device configurations provide fast switching between different measurement tasks. Saved setups can be downloaded to a PC for archiving and uploaded back to the instrument using the PC software SRM-3006 Tools/TS
Measurement Routines		Automated sequences of setups (created using the PC software SRM-3006 Tools/TS)
Results 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) as well as for LTE mode (LTE FDDTDD) and 5G. 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	Long term monitoring up to 99 hours (in all operating modes except "Scope"). Settings for: start date, start time, duration and time interval (6 s to 60 min)
	Memory capacity	128 MB (up to 8000 spectra, 4000 screenshots)
Hold		Button that "Freezes" the display; the measurement continues in the background.
Operating language		Selectable: English (Default), French, Spanish, Turkish, Simplified Chinese

General specifications			
Operating temperature range		-10 °C to +50 °C during normal operation with batteries 0 °C to +40 °C with external power supply	
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)	
	Ingress protection	IP 52 (with antenna attached and interface protector closed)	
	EMC	EU	Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2021
		Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11
		Emission	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B
Safety	Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1: 2010		
Material	Complies with European RoHS Directive 2011/65/EU, (EU)2015/863 and EN 63000:2018		
RF Immunity		200 V/m	
Air humidity (operating range)		< 29 g/m <sup>3</sup> (< 93 % RH at +30 °C), non-condensing	
Weight		2.8 kg / 6.2 lbs (basic unit including battery)	
Dimensions (H x W x D)		213 mm x 297 mm x 77 mm (8.4" x 11.7" x 3.0")	
Display	Type	Color display TFT-LCD with backlight, for indoor and outdoor use	
	Size, resolution	7 inch (152 mm x 91 mm), 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	Battery	Lithium-Ion rechargeable battery pack operating time: 2.5 hours (nominal) charging time: 4.5 hours (nominal)	
	External power supply	Input: 9 to 15 V <sub>DC</sub> Adapter 100-240 V <sub>AC</sub> / 12 V <sub>DC</sub> , 2.5 A (plug DIN 45323)	
Recommended calibration interval		24 months	
Country of origin		Germany	



# Specifications - Isotropic antennas

## Three-axis antenna (E-field) 3501/03

RF Data				
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 <sup>b</sup>	0.2 mV/m to 200 V/m (typ.)			
Maximum field strength (destruction limit)	435 V/m or 50 mW/cm <sup>2</sup> (nom.)			
Displayed Average Noise Level (DANL) in conjunction with the SRM basic unit	Frequency range	Single-axis measurement with isotropic antenna	Isotropic measurement	
	900 MHz (RBW = 1 kHz)	25 µV/m (typ.)	40 µV/m (typ.)	
	2.1 GHz (RBW = 1 kHz)	40 µV/m (typ.)	70 µV/m (typ.)	
Measurement range limit (for single CW signal)	300 V/m (typ.)			
	1000 V/m (typ.) for $f \leq 110$ MHz			
RF connector	N-Connector, 50 Ω, male			
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) -40 °C to +70 °C	
		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)	
	Ingress protection		IP 52 (antenna connected)	
	EMC	EU	Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2021	
		Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11	
		Emission	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B	
Safety		Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1: 2010		
Material		Complies with European RoHS Directive 2011/65/EU, (EU)2015/863 and EN 63000:2018		
Air humidity (operating range)		< 29 g/m <sup>3</sup> (< 93 % RH at +30 °C), non-condensing		
Weight		450 g		
Dimensions		450 mm length; 120 mm antenna head diameter		
Calibration <sup>c</sup>		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		

<sup>b</sup> For a signal to noise ratio of 10 dB (RBW = 1 kHz); 800 MHz to 1.8 GHz

<sup>c</sup> Antenna is oriented in the ortho-angle position (stem 54.7 to the electric field vector).

<b>Measurement uncertainty</b>			
Expanded measurement uncertainty <sup>d</sup> (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	+3.2 / -4.7 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

<sup>d</sup> Valid for the temperature range +15 °C to +30 °C, according to the definition on page 3

## Three-axis antenna (E-field) 3502/02

RF Data				
Frequency range	200 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 <sup>e</sup>	0.14 mV/m to 160 V/m (typ.)			
Maximum field strength (destruction limit)	435 V/m or 50 mW/cm <sup>2</sup> (nom.)			
Displayed Average Noise Level (DANL) in conjunction with the SRM basic unit	Frequency range	Single-axis measurement with isotropic antenna	Isotropic measurement	
	900 MHz (RBW = 1 kHz)	33 µV/m (typ.)	60 µV/m (typ.)	
	2.1 GHz (RBW = 1 kHz)	25 µV/m (typ.)	43 µV/m (typ.)	
Measurement range limit (for single CW signal)	200 V/m (typ.)			
RF connector	N-Connector, 50 Ω, male			
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) -40 °C to +70 °C	
		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)	
	Ingress protection	IP 52 (antenna connected)		
	EMC	EU	Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2021	
		Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11	
		Emission	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B	
Safety	Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1: 2010			
Material	Complies with European RoHS Directive 2011/65/EU, (EU)2015/863 and EN 63000:2018			
Air humidity (operating range)	< 29 g/m <sup>3</sup> (< 93 % RH at +30 °C), non-condensing			
Weight	400 g			
Dimensions	450 mm length; 120 mm antenna head diameter			
Calibration <sup>f</sup>	24 reference points: (200, 250, 300, 420, 600, 750, 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			

<sup>e</sup> For a signal to noise ratio of 10 dB (RBW = 1 kHz); 1.8 GHz to 2.2 GHz

<sup>f</sup> Antenna is oriented in the ortho-angle position (stem 54.7 to the electric field vector).

<b>Measurement uncertainty</b>			
Expanded measurement uncertainty <sup>g</sup> (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single-axis measurement with isotropic antenna	Isotropic measurement
	200 – 299 MHz	+2.0 / -2.6 dB	+2.9 / -4.3 dB
	300 – 750 MHz	+2.0 / -2.6 dB	+2.5 / -3.5 dB
	> 750 – 1400 MHz	+1.9 / -2.4 dB	+2.0 / -2.6 dB
	> 1400 – 1800 MHz	+2.0 / -2.6 dB	+2.1 / -2.9 dB
	> 1800 – 2000 MHz	+1.8 / -2.3 dB	+1.9 / -2.5 dB
	> 2000 – 3000 MHz	+1.7 / -2.2 dB	+2.0 / -2.6 dB
	> 3000 – 4500 MHz	+1.8 / -2.3 dB	+2.1 / -2.9 dB
	> 4500 – 5000 MHz	+1.8 / -2.3 dB	+2.4 / -3.3 dB
	> 5000 – 6000 MHz	+1.8 / -2.3 dB	+3.2 / -5.1 dB

<sup>g</sup> Valid for the temperature range +15 °C to +30 °C, according to the definition on page 3

## Three-axis antenna (H-field) 3581/02

RF Data				
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	Three-axis active magnetic loop design with scanned axes			
Dynamic range <sup>h</sup>	2.5 $\mu$ A/m to 560 mA/m (typ.)			
Maximum field strength (destruction limit)	250 A/m / f [MHz] (nom.)			
Displayed Average Noise Level (DANL) in conjunction with the SRM basic unit	Frequency range	Single-axis measurement with isotropic antenna	Isotropic measurement	
	> 1 MHz (RBW = 1 kHz)	0.5 $\mu$ A/m (typ.)	0.85 $\mu$ A/m (typ.)	
Measurement range limit (for single CW signal)	560 mA/m (typ.)			
RF connector	N-Connector, 50 $\Omega$ , male			
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) -40 °C to +70 °C	
		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)	
	Ingress protection	IP 52 (antenna connected)		
	EMC	EU	Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2021	
		Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11	
		Emission	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B	
Safety	Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1: 2010			
Material	Complies with European RoHS Directive 2011/65/EU, (EU)2015/863 and EN 63000:2018			
Air humidity (operating range)	< 29 g/m <sup>3</sup> (< 93 % RH at +30 °C), non-condensing			
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			
Measurement uncertainty				
Expanded measurement uncertainty <sup>i</sup> (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	$\pm$ 2.2 dB	$\pm$ 2.5 dB	
	> 60 – 250 MHz	$\pm$ 2.3 dB	$\pm$ 3.3 dB	

<sup>h</sup> For a signal to noise ratio of 10 dB (RBW = 1 kHz); 3 MHz to 250 MHz

<sup>i</sup> Valid for the temperature range +15 °C to +30 °C, according to the definition on page 3

# Specifications - Single axis antennas

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

RF Data		
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 broadband dipole	
Dynamic range <sup>l</sup>	60 $\mu$ V/m to 80 V/m (typ.)	
Maximum field strength (destruction limit)	> 300 V/m or 25 mW/cm <sup>2</sup> (nom.)	
Displayed Average Noise Level (DANL) in conjunction with the SRM basic unit	20 $\mu$ V/m (typ.) from 100 MHz to 2.2 GHz with RBW = 1 kHz	
Measurement range limit (for single CW signal)	160 V/m (typ.)	
RF connector	N-Connector, 50 $\Omega$ , male	
General specifications		
Operating temperature range	-10 °C to +50 °C (same as SRM basic unit)	
Compliance	Climatic	
	Mechanical	
	Storage	1K3 (IEC 60721-3) extended to -10 °C to +50 °C
	Transport	2K4 (IEC 60721-3) -40 °C to +70 °C
	Operating	7K2 (IEC 60721-3) extended to -10 °C to +50 °C
	Storage	1M3 (IEC 60721-3)
	Transport	2M3 (IEC 60721-3)
	Operating	7M3 (IEC 60721-3)
	Ingress protection	IP 52 (antenna connected)
EMC	EU	Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2021
	Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11
	Emission	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B
	Safety	Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1: 2010
	Material	Complies with European RoHS Directive 2011/65/EU, (EU)2015/863 and EN 63000:2018
Air humidity (operating range)	< 29 g/m <sup>3</sup> (< 93 % RH at +30 °C), non-condensing	
Weight	450 g	
Dimensions	460 mm length; 135 mm x 90 mm antenna head diameter	
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 basic unit applies linear interpolation between reference points	
Recommended calibration interval	24 months	
Country of origin	Germany	
Measurement uncertainty		
Expanded measurement uncertainty <sup>k</sup> (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single-axis measurement
	26 – 300 MHz	$\pm$ 2.1 dB
	> 300 – 433 MHz	$\pm$ 2.4 dB
	> 433 – 1600 MHz	$\pm$ 2.2 dB
	> 1600 – 3000 MHz	$\pm$ 1.9 dB

<sup>j</sup> For a signal to noise ratio of 10 dB (RBW = 1 kHz); 100 MHz to 2.2 GHz

<sup>k</sup> Valid for the temperature range +15 °C to +30 °C, according to the definition on page 3



## Single-axis antenna (E-field) 3531/04

RF Data				
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 <sup>l</sup>	50 µV/m to 16 V/m (typ.) for 300 kHz to 10 MHz 50 µV/m to 36 V/m (typ.) for > 10 MHz to 300 MHz			
Maximum field strength (destruction limit)	> 1000 V/m (nom.)			
Displayed Average Noise Level (DANL) in conjunction with the SRM basic unit	20 µV/m (typ.) for each frequency > 1 MHz with RBW = 1 kHz			
Measurement range limit (for single CW signal)	50 V/m (typ.)			
RF connector	N-Connector, 50 Ω, male			
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) -40 °C to +70 °C	
		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)	
	Ingress protection	IP 52 (antenna connected)		
	EMC	EU	Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2021	
		Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11	
Emission		IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B		
Safety	Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1: 2010			
Material	Complies with European RoHS Directive 2011/65/EU, (EU)2015/863 and EN 63000:2018			
Air humidity (operating range)	< 29 g/m <sup>3</sup> (< 93 % RH at +30 °C), non-condensing			
Weight	550 g			
Dimensions	460 mm length; 135 mm x 90 mm antenna head diameter			
Calibration	183 reference points: The SRM basic unit applies linear interpolation between reference points			
Recommended calibration interval	24 months			
Country of origin	Germany			
Measurement uncertainty				
Expanded measurement uncertainty <sup>m</sup> (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single-axis measurement		
	0.009 – 300 MHz	±2.0 dB		

<sup>l</sup> For a signal to noise ratio of 10 dB (RBW = 1 kHz)

<sup>m</sup> Valid for the temperature range +15 °C to +30 °C, according to the definition on page 3

## Single-axis antenna (H-field) 3551/02

RF Data			
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 <sup>n</sup>	0.4 µA/m to 71 A/m (typ.)		
Maximum field strength (destruction limit)	> 2.65 A/m above 1 MHz (nom.)		
Displayed Average Noise Level (DANL) in conjunction with the SRM basic unit	0.12 µA/m (typ.) for each frequency > 10 MHz with RBW = 1 kHz		
Measurement range limit (for single CW signal)	100 mA/m (typ.)		
RF connector	N-Connector, 50 Ω, male		
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) -40 °C to +70 °C
	Mechanical	Operating	7K2 (IEC 60721-3) extended to -10 °C to +50 °C
		Storage	1M3 (IEC 60721-3)
		Transport	2M3 (IEC 60721-3)
		Operating	7M3 (IEC 60721-3)
	Ingress protection	IP 52 (antenna connected)	
EMC	EU	Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2021	
	Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11	
	Emission	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B	
Safety	Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1: 2010		
Material	Complies with European RoHS Directive 2011/65/EU, (EU)2015/863 and EN 63000:2018		
Air humidity (operating range)	< 29 g/m <sup>3</sup> (< 93 % RH at +30 °C), non-condensing		
Weight	450 g		
Dimensions	460 mm length; 43 mm x 100 mm antenna head diameter		
Calibration	183 reference points: The SRM basic unit applies linear interpolation between reference points		
Recommended calibration interval	24 months		
Country of origin	Germany		
Measurement uncertainty			
Expanded measurement uncertainty <sup>o</sup> (in conjunction with SRM basic unit and 1.5 m RF cable)	Frequency range	Single-axis measurement	
	0.009 – 300 MHz	±2.0 dB	
	> 1 – 300 MHz	±1.8 dB	

<sup>n</sup> For a signal to noise ratio of 10 dB (RBW = 1 kHz); for frequencies > 10 MHz

<sup>o</sup> Valid for the temperature range +15 °C to +30 °C, according to the definition on page 3

# IEC 62232 conformity for Frequency-selective measurement system

All mentioned values are in compliance with IEC 62232:2017 as well as HJ 1151-2020.

The specified uncertainties in the tables below are evaluated under the following conditions:

- › SRM-3006 basic unit, antenna and RF cable (P/N 3602/01 or 3602/02) included
- › Temperature range: +15 to +30 °C

## SRM-3006 with Three-Axis Antenna, 27 MHz to 3 GHz (3501/03)

Frequency response	Minimum detection level	Dynamic range	Linearity	Probe isotropy <sup>pq</sup>
27 MHz to 3 GHz: ± 1,5 dB	< 0,01 mW/m <sup>2</sup> (i.e. 0,06 V/m) Signal-to-noise ratio of at least 10 dB in the measurement bandwidth	> 60 dB	≤ 1,2 dB	< 700 MHz: < 2 dB 700 MHz to 3 GHz: < 3 dB

## SRM-3006 with Three-Axis Antenna, 200 MHz to 6 GHz (3502/02)

Frequency response	Minimum detection level	Dynamic range	Linearity	Probe isotropy <sup>rs</sup>
200 MHz to 6 GHz: ± 1,5 dB	< 0,01 mW/m <sup>2</sup> (i.e. 0,06 V/m) Signal-to-noise ratio of at least 10 dB in the measurement bandwidth	> 60 dB	≤ 1,2 dB	< 700 MHz: < 2 dB 700 MHz to 5 GHz: < 3 dB > 5 GHz: < 5 dB

## Measurement uncertainty of SRM-3006 with Three-Axis Antennas

Frequency range	Expanded uncertainty (k = 2)	
	Antenna 3501/03	Antenna 3502/02
< 800 MHz	2.64 dB	2.13 dB
800 MHz to 3 GHz	2.31 dB	2.06 dB
> 3 GHz to 6 GHz	NA	1.89 dB

The specified uncertainties in the table “Measurement uncertainty of SRM-3006 with Three-Axis Antennas” above are evaluated under the following additional condition:

- › Frequency Response and Linearity included

## Isotropic Response of SRM-3006 with Three-Axis Antennas

Frequency range	Isotropic response <sup>t</sup>	
	Antenna 3501/03	Antenna 3502/02
< 800 MHz	0.5 dB	0.75 dB
800 MHz to 3 GHz	2.2 dB	1.0 dB
> 3 GHz to 6 GHz	NA	2.35 dB

*p* The antenna is rotated about its ortho-axis for each frequency. The isotropic response is calculated from the maximum and minimum indication after a full revolution of 360° has been made..

*q* Probes and measurement antennas with isotropic response are recommended. Single-axis (e.g. dipole) and directional measurement antennas are permitted provided that the measurements are post processed to obtain the total field strength (equivalent to a measurement with an isotropic probe / measurement antenna).

*r* See *p*

*s* See *q*

*t* See *p*

## Ordering information

The Selective Radiation Meter, Basic Unit, is included in the Basic Sets. Software Options and Accessories that provide additional capabilities are also available.

Your local Narda sales representative can provide information about all the possible options as well as the current ordering information and will be pleased to offer advice.

### Basic Unit Sets

SRM-3006, Selective Radiation Meter, Set 2	Part number
Basic Unit without Antenna <b>Includes:</b> <ul style="list-style-type: none"> <li>› Selective Radiation Meter, Basic Unit, SRM-3006</li> <li>› RF-Cable SRM, 9 kHz – 6 GHz, N 50 Ohm, 1.5 m (3602/01)</li> <li>› Carrying Strap for SRM (Basic Unit) (3001/90.02)</li> <li>› Holding Strap for SRM-3006 Basic Unit (3001/90.12)</li> <li>› Operating Manual SRM-3006, English (3006/98.21)</li> <li>› Power Supply 12 VDC, 100 V – 240 VAC, all Plugs (2259/92.04)</li> <li>› Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55)</li> <li>› Reference Book Measuring RF Electromagnetic Fields (3006/98.25)</li> <li>› Safety Instructions (3300/98.10)</li> <li>› SRM Hardcase Trolley (3006/90.01)</li> <li>› Calibration Certificates: Basic Unit, RF-Cable</li> </ul>	<b>With Trolley Hardcase 3006/202</b>
SRM-3006, Selective Radiation Meter, Set 8	Part number
Basic Unit plus one Isotropic Antenna (27 MHz – 3 GHz) <b>Includes:</b> <ul style="list-style-type: none"> <li>› Selective Radiation Meter, Basic Unit, SRM-3006</li> <li>› Antenna, Three-Axis, E-Field, 27 MHz – 3 GHz (3501/03)</li> <li>› RF-Cable SRM, 9 kHz – 6 GHz, N 50 Ohm, 1.5 m (3602/01)</li> <li>› Carrying Strap for SRM (Basic Unit) (3001/90.02)</li> <li>› Holding Strap for SRM-3006 Basic Unit (3001/90.12)</li> <li>› Operating Manual SRM-3006, English (3006/98.21)</li> <li>› Power Supply 12 VDC, 100 V – 240 VAC, all Plugs (2259/92.04)</li> <li>› Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55)</li> <li>› Reference Book Measuring RF Electromagnetic Fields (3006/98.25)</li> <li>› Safety Instructions (3300/98.10)</li> <li>› SRM Hardcase Trolley (3006/90.01)</li> <li>› Calibration Certificates: Basic Unit, RF-Cable, Antenna</li> </ul>	<b>With Trolley Hardcase 3006/208</b>

<b>SRM-3006, Selective Radiation Meter, Set 9</b>	<b>Part number</b>
<p>Basic Unit plus one Isotropic Antenna (200 MHz – 6 GHz)</p> <p><b>Includes:</b></p> <ul style="list-style-type: none"> <li>› Selective Radiation Meter, Basic Unit, SRM-3006</li> <li>› Antenna, Three-Axis, E-Field, 200 MHz – 6 GHz (3502/02)</li> <li>› RF-Cable SRM, 9 kHz – 6 GHz, N 50 Ohm, 1.5m (3602/01)</li> <li>› Carrying Strap for SRM (Basic Unit) (3001/90.02)</li> <li>› Holding Strap for SRM-3006 Basic Unit (3001/90.12)</li> <li>› Operating Manual SRM-3006, English (3006/98.21)</li> <li>› Power Supply 12 VDC, 100 V – 240 VAC, all Plugs (2259/92.04)</li> <li>› Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55)</li> <li>› Reference Book Measuring RF Electromagnetic Fields (3006/98.25)</li> <li>› Safety Instructions (3300/98.10)</li> <li>› SRM Hardcase Trolley (3006/90.01)</li> <li>› Calibration Certificates: Basic Unit, RF-Cable, Antenna</li> </ul>	<p><b>With Trolley Hardcase 3006/209</b></p>
<b>SRM-3006, Selective Radiation Meter, Set 10</b>	<b>Part number</b>
<p>Basic Unit plus two Isotropic Antennas (9 kHz – 6 GHz)</p> <p><b>Includes:</b></p> <ul style="list-style-type: none"> <li>› Selective Radiation Meter, Basic Unit, SRM-3006</li> <li>› Antenna, Three-Axis, E-Field, 200 MHz – 6 GHz (3502/02)</li> <li>› Antenna, Three-Axis, H-Field, 9 kHz – 250 MHz (3581/02)</li> <li>› RF-Cable SRM, 9 kHz – 6 GHz, N 50 Ohm, 1.5 m (3602/01)</li> <li>› Carrying Strap for SRM (Basic Unit) (3001/90.02)</li> <li>› Holding Strap for SRM-3006 Basic Unit (3001/90.12)</li> <li>› Operating Manual SRM-3006, English (3006/98.21)</li> <li>› Power Supply 12 VDC, 100 V – 240 VAC, all Plugs (2259/92.04)</li> <li>› Cable, USB 2.0, Master/Slave - A/B mini (2260/90.55)</li> <li>› Reference Book Measuring RF Electromagnetic Fields (3006/98.25)</li> <li>› Safety Instructions (3300/98.10)</li> <li>› SRM Hardcase Trolley (3006/90.01)</li> <li>› Calibration Certificates: Basic Unit, RF-Cable, Antennas</li> </ul>	<p><b>With Trolley Hardcase 3006/210</b></p>

## Software Options

Description	Part number
Option, UMTS P-CPICH Demodulation	3701/04
Option, Scope	3701/05
Option, LTE (for FDD networks)	3701/06
Option, LTE (for TDD networks)	3701/07
Option, 5G NR	3701/08
Software, SRM-3006 Tools, Configuration SW (available for free at <a href="http://www.narda-sts.com">www.narda-sts.com</a> under Downloads)	-
Software, SRM-3006 TS, PC Evaluation and Remote	3006/93.10

## Accessories

Accessory description	Part number
Antenna Holder for Uniaxial/Triaxial Antenna	3501/90.01
Antenna Holder for Triaxial Antenna	3501/90.02
RF-Cable, 9kHz-6GHz, 1.5m, N 50 Ohm (included in all sets)	3602/01
RF-Cable, 9kHz-6GHz, 5m, N 50 Ohm	3602/02
Tripod, Non-Conductive, 1.65 m with carrying bag	2244/90.31
Tripod Extension, 0.50m, Non-Conductive	2244/90.45
Battery Pack, Rechargeable, 7V2 / 6200 mAh (one is included in each SRM Basic Unit)	3001/90.15
Charger Set for Battery Pack, External	3001/90.07
Power Supply DC Vehicle Adapter	2260/90.56
SRM Hardcase Trolley (for up to three antennas), replaces 3001/90.05 and 3001/90.03	3006/90.01
Protective Soft Carrying Bag for SRM-3006 Basic Unit	3001/90.13
N-Connector Saver for SRM	3001/90.14
O/E Converter USB, RP-02/USB	2260/90.07
Cable, FO Duplex, F-SMA to RP-02, 0.3m	2260/91.01
Cable, FO Duplex, RP-02, 2m	2260/91.02
Cable, FO Duplex, RP-02, 5m	2260/91.09
Cable, FO Duplex, RP-02, 10m	2260/91.07
Cable, FO Duplex, RP-02, 20m	2260/91.03
Cable, FO Duplex, RP-02, 50m	2260/91.04
Earphone, 3.5mm Plug	2400/90.03
Reference Book Measuring RF Electromagnetic Fields (included in all sets)	3006/98.25
Operating Manual SRM-3006, German (select for free instead of English)	3006/98.01

Antennas	Part number
Antenna, Three-Axis, E-Field, 27 MHz – 3 GHz	3501/03
Antenna, Three-Axis, E-Field, 200 MHz – 6 GHz	3502/02
Antenna, Three-Axis, H-Field, 9 kHz – 250 MHz	3581/02
Antenna, Single-Axis, E-Field, 27 MHz – 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
Antenna, Set 5G FR2 Antenna, directional, 24.25 to 29.5 GHz. See separate datasheet at <a href="http://narda-sts.com">narda-sts.com</a> for more info	3591/101
Antenna, Set 5G FR2 Antenna, omnidir., 24.25 to 29.5 GHz. See separate datasheet at <a href="http://narda-sts.com">narda-sts.com</a> for more info	3591/102
Antenna, Set 5G FR2 Antenna, dir. + omni., 24.25 to 29.5 GHz. See separate datasheet at <a href="http://narda-sts.com">narda-sts.com</a> for more info	3591/103



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