

R&S® ADD597 SINGLE-CHANNEL DIRECTION FINDING ANTENNA

Specifications



Data Sheet
Version 03.00

ROHDE & SCHWARZ

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CONTENTS

Definitions	3
Specifications.....	4
Electrical data.....	4
Mechanical and environmental data	5

The figure on the cover page shows the R&S®ADD597 single-channel direction finding antenna with R&S®ADD-LR1 lightning rod and R&S®ADD-MA1 mast adapter.

Definitions

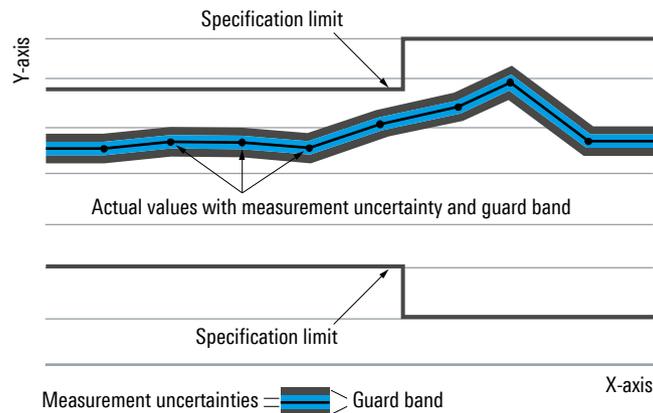
General

Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits

Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as $<$, \leq , $>$, \geq , \pm , or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)

Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits

Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

Typical data (typ.)

Characterizes product performance by means of representative information for the given parameter. When marked with $<$, $>$ or as a range, it represents the performance met over more than 80 % of the specified product frequency range. Otherwise, it represents the mean value.

Nominal values (nom.)

Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)

Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties

Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format “parameter: value”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP/3GPP2 standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Specifications

Electrical data

Direction finding

Frequency range	vertical polarization	20 MHz to 8.5 GHz
	horizontal polarization	20 MHz to 7.5 GHz
Polarization		vertical or horizontal
Antenna element type	vertical polarization	active dipoles with variable electrical length, can be switched to passive operation (frequency range up to 1.3 GHz); passive dipoles (frequency range above 1.3 GHz)
	horizontal polarization	active loop antenna, can be switched to passive operation (frequency range up to 1.3 GHz); passive dipoles (frequency range above 1.3 GHz)
DF method		correlative interferometer
DF accuracy ¹	with installed lightning protection (R&S®ADD-LR1 or R&S®ADD-LP), both types of polarization	
	vertical polarization	
	20 MHz to 8.5 GHz ²	1° RMS (typ.)
	40 MHz to 1.3 GHz ²	0.5° RMS (meas.)
	horizontal polarization	
	20 MHz to 7.5 GHz ²	1.5° RMS (typ.)
	40 MHz to 1.3 GHz ²	0.6° RMS (meas.)
DF sensitivity ³		see Fig. 1
Circularity in monitoring mode ⁴	deviation of horizontal radiation diagram from a non-directional diagram, with lightning rod; 20 MHz to 6 GHz	2 dB (typ.) (meas.)
VSWR		2.0 (typ.) (nom.)

¹ Measurement in reflection-free environment. The RMS error is calculated from the bearings of evenly distributed samples versus azimuth and frequency.

² In line with Recommendation ITU-R SM.2060.

³ In line with Recommendation ITU-R SM.2096.

⁴ ITU measurement software option for DF equipment required.

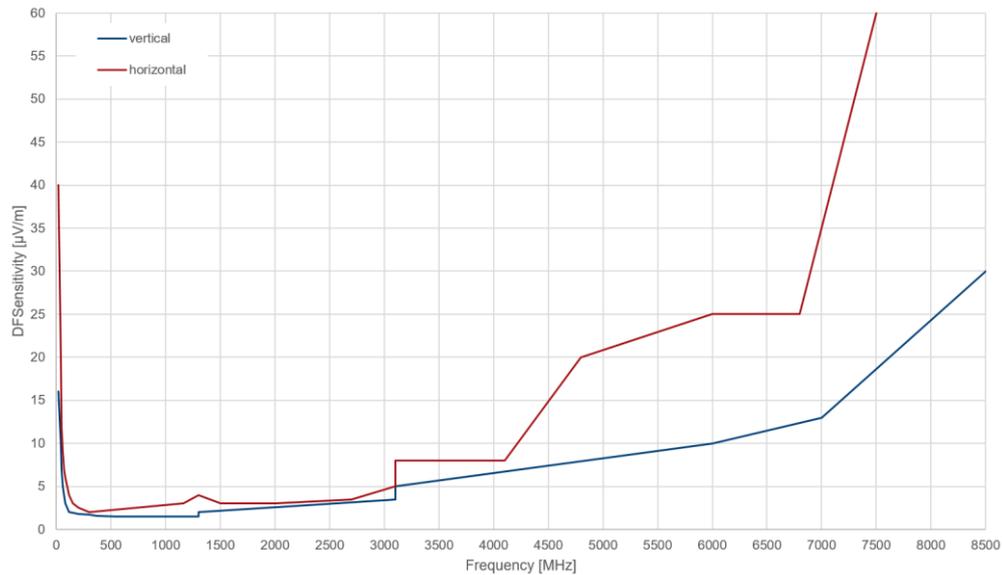


Fig. 1: DF sensitivity ⁵ (low-noise mode, 5° RMS, 5 s, 1.33 kHz (typ.))

Monitoring

Frequency range	vertical polarization	20 MHz to 8.5 GHz
	horizontal polarization	20 MHz to 8.5 GHz
Polarization		vertical or horizontal
Antenna element type	vertical polarization	active dipoles; can be switched to passive operation (frequency range up to 1.3 GHz); passive dipoles (frequency range above 1.3 GHz)
	horizontal polarization	active loop antenna, can be switched to passive operation (frequency range up to 1.3 GHz); passive dipoles (frequency range above 1.3 GHz)
VSWR		2.0 (typ.) (nom.)

Mechanical and environmental data

Operating temperature range		−40 °C to +65 °C, in line with MIL-STD-810G, methods 501.5 and 502.5, procedure II, DIN EN 60068-2-1/-2
Storage temperature range		−40 °C to +85 °C, in line with MIL-STD-810G, methods 501.5 and 502.5, procedure I, DIN EN 60068-2-1/-2
Humidity		95 % relative humidity, +30 °C/+60 °C, 10 cycles, in line with MIL-STD-810G, methods 507.5, procedure II
Shock	shock spectrum	ramp 6 dB/octave up to 45 Hz; 45 Hz to 2000 Hz, max. 40 g, in line with MIL-STD-810G, method 516.6, procedure I

⁵ R&S®ADD597 with R&S®DDF255, R&S®ESMD-DF or R&S®ESME-DF.

Vibration	sinusoidal	4 Hz to 33 Hz, in line with MIL-STD-810G, method 528, procedure I (Type I) 5 Hz to 55 Hz: 0.3 mm (peak-to-peak); 55 Hz to 150 Hz: 0.5 g const., in line with EN 60068-2-6:2008
	random (vehicle)	5 Hz to 500 Hz, in line with MIL-STD-810G, meth. 514.6, proc. I, cat. 20, Fig. 514.6C-3
	random (ship)	in line with MIL-STD-810G, meth. 514.6, proc. I, category 21
Electromagnetic compatibility	radiated emissions (electric field)	10 kHz to 18 GHz, in line with MIL-STD-461G, RE102
	in line with EMC directive 2014/53/EU	applied harmonized standards: <ul style="list-style-type: none"> • ETSI EN 301 489-1 V2.2.3 (2019-11) • ETSI EN 301 489-22 V2.1.1 (2020-10) • EN 55032:2015 (Class B)
Safety		DIN EN 62368-1:2016-05
Protection class		IP55, in line with EN 60529
Salt fog		in line with MIL-STD810H, meth. 509.7 (96h)
Altitude		10 700 m, in line with RTCA DO-160G, Sect. 4, cat C
Lightning protection (against direct strikes)	with R&S®ADD-LR1 or R&S®ADD-LP: up to installation heights of 20 m	DIN EN 62305-1, IEC 62305-1 Lightning Protection Level II (150 kA)
	with R&S®ADD-LP: installation heights above 20 m	
Permissible wind speed	without ice deposit	275 km/h
	with 30 mm radial ice deposit	180 km/h
MTBF	in line with SN29500, +23 °C, fixed station	approx. 90 000 h
Dimensions	Ø x H, with R&S®ADD-LR1 lightning rod	approx. 1.1 m x 1.55 m (43.3 in x 61.0 in)
	Ø x H, with lightning rod support	approx. 1.1 m x 0.59 m (43.3 in x 23.2 in)
	Ø x H, with R&S®ADD-GNS GNSS module	approx. 1.1 m x 0.48 m (43.3 in x 18.9 in)
Weight	with R&S®ADD-LR1 lightning rod	approx. 34 kg (74.96 lb)
	with R&S®ADD-GNS GNSS module	approx. 32 kg (70.55 lb)
RoHS conformity		EN 50581:2012

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