

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-15195-01-02 according to DIN EN ISO/IEC 17025:2018

Valid from: 29.07.2019

Date of issue: 30.07.2019

Holder of certificate:

Rohde & Schwarz Meßgerätebau GmbH

with its calibration laboratory

Spidrova 49, 38501 Vimperk, Tschechien

Calibration in the fields:

Electrical quantities

DC and low frequency quantities

- DC voltage
- AC voltage
- DC current
- AC current
- DC resistance
- Capacitance

Time and frequency

- Time interval
- Frequency

High frequency quantities

- HF voltage
- HF power
- HF attenuation
- HF impedance
- HF noise
- Modulation quantities
- Band width
- Rise time

Abbreviations used: see last page

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks	
HF Power with mismatch correction at 2 GHz	0.2 fW to 10 pW	8 kHz to 100 MHz	$20 \cdot 10^{-3}$	Connector: 2.92mm ²⁾	
		> 8 GHz to 20 GHz	$24 \cdot 10^{-3}$		
	1 fW to 10 pW	> 20 GHz to 40 GHz	$29 \cdot 10^{-3}$	Connector: 2.4 mm ²⁾	
		> 40 GHz to 44 GHz	$43 \cdot 10^{-3}$		
	10 fW to 10 pW	8 kHz to 100 MHz	$15 \cdot 10^{-3}$	Connector: 2.92mm ²⁾	
		> 100 MHz to 8 GHz	$17 \cdot 10^{-3}$		
	> 10 pW to 0.1 μW	> 8 GHz to 20 GHz	$20 \cdot 10^{-3}$	Connector: 2.4 mm ²⁾	
		> 20 GHz to 40 GHz	$26 \cdot 10^{-3}$		
	10 pW to 0.1 mW	> 40 GHz to 44 GHz	$34 \cdot 10^{-3}$	Connector: 2.92mm ²⁾	
		8 kHz to 100 MHz	$10 \cdot 10^{-3}$		
		> 100 MHz to 8 GHz	$13 \cdot 10^{-3}$		
		> 8 GHz to 20 GHz	$16 \cdot 10^{-3}$		
	0.1 μW to 0.2 W	> 20 GHz to 40 GHz	$23 \cdot 10^{-3}$	Connector: 2.4 mm ²⁾	
		> 40 GHz to 44 GHz	$30 \cdot 10^{-3}$		
		> 8 kHz to 100 MHz	$18 \cdot 10^{-3}$		Connector: N50 ²⁾
		> 100 MHz to 2 GHz	$19 \cdot 10^{-3}$		
> 0.2 W to 1 W	> 2 GHz to 8 GHz	$30 \cdot 10^{-3}$	Connector: N50 ²⁾		
	> 8 GHz to 12.4 GHz	$40 \cdot 10^{-3}$			
	> 12.4 GHz to 18 GHz	$55 \cdot 10^{-3}$			
	> 8 kHz to 100 MHz	$27 \cdot 10^{-3}$			
> 1 W to 10 W	> 100 MHz to 2 GHz	$28 \cdot 10^{-3}$			
	> 2 GHz to 8 GHz	$36 \cdot 10^{-3}$			
	> 8 GHz to 12.4 GHz	$45 \cdot 10^{-3}$			
	> 12.4 GHz to 18 GHz	$59 \cdot 10^{-3}$			
> 10 W to 30 W	> 8 kHz to 100 MHz	$58 \cdot 10^{-3}$			
	> 100 MHz to 2 GHz	$58 \cdot 10^{-3}$			
	> 2 GHz to 8 GHz	$63 \cdot 10^{-3}$			
	> 8 GHz to 12.4 GHz	$68 \cdot 10^{-3}$			
Linearity of HF Attenuation	0 dB to 71 dB	> DC to 44 GHz	0.025 dB	Connector ²⁾ : 2.4mm	
	> 71 dB to 91 dB	> DC to 44 GHz	0.030 dB		
	> 91 dB to 121 dB	> DC to 44 GHz	0.040 dB		
Rise time	1 ns to 10 ns	> 700 MHz to 40 GHz	1 ns	Connector ²⁾ : 2.92mm	
Amplitude modulation Modulation degree <i>m</i>	1 % to 99 %	> DC $f_{MOD} \leq 100$ kHz	$0.002 \cdot m + K$	$f_0 > 5 \cdot f_{MOD}$	
		> 100 kHz $f_{MOD} \leq 500$ kHz	$0.005 \cdot m + K$	f_0 : carrier frequency	
		> 500 kHz $f_{MOD} \leq 3$ MHz	$0.02 \cdot m + K$	100 kHz to 44 GHz	
Frequency modulation Frequency depth Δf	10 Hz to 16 MHz	> 3 MHz $f_{MOD} \leq 6$ MHz	$0.04 \cdot m + K$	f_{MOD} : Modulation freq.	
		> 10 Hz $f_{MOD} \leq 100$ kHz	$1 \cdot 10^{-3} + K$	$f_0 > 5 \cdot (f_{MOD} + \Delta f)$	
		> 100 kHz $f_{MOD} \leq 200$ kHz	$2 \cdot 10^{-3} + K$	f_0 : carrier frequency	
Phase modulation Phase depth $\Delta \phi$	(10 Hz/ f_{MOD}) rad to (16 MHz/ f_{MOD}) rad	> 200 kHz $f_{MOD} \leq 10$ MHz	$5 \cdot 10^{-3} + K$	100 kHz to 44 GHz	
		> 10 Hz $f_{MOD} \leq 100$ kHz	$1 \cdot 10^{-3} + K$	$f_0 > 5 \cdot f_{MOD} \cdot (1 + \Delta \phi)$	
		> 100 kHz $f_{MOD} \leq 200$ kHz	$2 \cdot 10^{-3} + K$	f_0 : carrier frequency	
		> 200 kHz $f_{MOD} \leq 10$ MHz	$5 \cdot 10^{-3} + K$	8 MHz to 44 GHz	

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Annex to the accreditation certificate D-K-15195-01-02

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks
HF Power Sources, Measuring devices with mismatch correction	10 nW to 50 nW	8 kHz to 100 MHz	$14 \cdot 10^{-3}$	Connector: N50 ²⁾
		> 100 MHz to 2.4 GHz	$15 \cdot 10^{-3}$	
		> 2.4 GHz to 6 GHz	$17 \cdot 10^{-3}$	
	> 50 nW to 200 mW	8 kHz to 100 MHz	$10 \cdot 10^{-3}$	
		> 100 MHz to 2.4 GHz	$11 \cdot 10^{-3}$	
		> 2.4 GHz to 6 GHz	$13 \cdot 10^{-3}$	
10 μ W to 100 mW	50 MHz	$5 \cdot 10^{-3}$		
	1 GHz	$6 \cdot 10^{-3}$		
HF Linearity Attenuation	100 nW to 10 μ W	> 8 kHz to 6 GHz	0.022 dB	Connector: N50 ²⁾
	> 10 μ W to 100 mW	> DC to 6 GHz	0.01 dB	
HF voltage splitters (effective value)	2 mV to 22 mV	> 8 kHz to 6 GHz	0.022 dB	Connector: N50 ²⁾
	> 22 mV to 2 V	> DC to 6 GHz	0.01 dB	
HF Voltage Measuring devices (effective value)	2 mV to 2 V	> 8 kHz to 100 MHz	$7 \cdot 10^{-3}$	Connector: N50 ²⁾ Spannung: 50 Ohm
		> 100 MHz to 2.4 GHz	$7.5 \cdot 10^{-3}$	
		> 2 GHz to 6 GHz	$8.5 \cdot 10^{-3}$	
Band width	10 MHz to 6 GHz	2 mV to 2 V	$60 \cdot 10^{-3} \cdot f$	Connector: N50 ²⁾ <i>f</i> : Measuring value
Capacitance	1.1 nF to < 3.3 nF	10 Hz to 1 kHz	$6 \cdot 10^{-3} \cdot C + 0.01$ nF	C: Measuring value
	3.3 nF to < 11 nF		$2.8 \cdot 10^{-3} \cdot C + 0.01$ nF	
	11 nF to < 33 nF		$2.8 \cdot 10^{-3} \cdot C + 0.1$ nF	
	33 nF to < 110 nF		$2.8 \cdot 10^{-3} \cdot C + 0.1$ nF	
	110 nF to < 330 nF		$2.8 \cdot 10^{-3} \cdot C + 0.3$ nF	
	0.33 μ F to < 1.10 μ F	10 Hz to 600 Hz	$2.8 \cdot 10^{-3} \cdot C + 1$ nF	
	1.1 μ F to < 3.3 μ F	10 Hz to 300 Hz	$2.8 \cdot 10^{-3} \cdot C + 3$ nF	
	3.3 μ F to < 11 μ F	10 Hz to 150 Hz	$2.8 \cdot 10^{-3} \cdot C + 10$ nF	
	11 μ F to < 33 μ F	10 Hz to 120 Hz	$4.5 \cdot 10^{-3} \cdot C + 30$ nF	
	33 μ F to < 110 μ F	DC to 80 Hz	$5 \cdot 10^{-3} \cdot C + 100$ nF	
	110 μ F to < 330 μ F	DC to 50 Hz	$5 \cdot 10^{-3} \cdot C + 300$ nF	
	0.33 mF to < 1.1 mF	DC to 20 Hz	$5 \cdot 10^{-3} \cdot C + 1$ μ F	

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Frequency	10 MHz to 100 MHz 0.10 Hz to 44 GHz		$(2 \cdot 10^{-12} + U_{Tr}) \cdot f$ $(0.1 \cdot 10^{-9} + U_{Tr}) \cdot f$	f : Measuring value U_{Tr} : Trigger uncertainty
Time intervall	10 ns to 100 s		$(0.1 \cdot 10^{-9} + U_{Tr}) \cdot t$	t : Measuring value
Direct voltage Measuring devices	0 V to 220 mV > 220 mV to 1000 V		$10 \cdot 10^{-6} \cdot U + 1 \mu V$ $10 \cdot 10^{-6} \cdot U$	U : Measuring value
Sources	0 V to 100 mV > 100 mV to 100 V > 100 V to 1000 V		$10 \cdot 10^{-6} \cdot U + 2 \mu V$ $10 \cdot 10^{-6} \cdot U$ $20 \cdot 10^{-6} \cdot U$	
Direct resistance Resistances, Measuring devices	0 Ω to 10 Ω > 10 Ω to 100 Ω > 100 Ω to 100 k Ω > 100 k Ω to 1 M Ω > 1 M Ω to 10 M Ω > 10 M Ω to 100 M Ω > 100 M Ω to 1 G Ω		$15 \cdot 10^{-6} \cdot R + 60 \mu \Omega$ $12 \cdot 10^{-6} \cdot R + 0.5 m\Omega$ $15 \cdot 10^{-6} \cdot R$ $15 \cdot 10^{-6} \cdot R + 2 \Omega$ $50 \cdot 10^{-6} \cdot R + 0.1 k\Omega$ $0.6 \cdot 10^{-3} \cdot R$ $5.1 \cdot 10^{-3} \cdot R$	R : Measuring value
HF-Impedance (Reflecion factor)	0 to 0.4 > 0.4 to 1 0 to 0.4 > 0.4 to 1 0 to 0.4 > 0.4 to 1	> 8 kHz to 2 GHz > 2 GHz to 20 GHz > 20 GHz to 40 GHz	0.008 0.015 0.011 0.025 0.017 0.030	Connector: 2.92 mm ²⁾
HF-Attenuation	0 to 40 dB 40 dB to 70 dB 70 dB to 90 dB	> 8 kHz to 50 MHz > 50 MHz to 2 GHz > 2 GHz to 8 GHz > 8 GHz to 20 GHz > 20 GHz to 40 GHz > 8 kHz to 50 MHz > 50 MHz to 2 GHz > 2 GHz to 8 GHz > 8 GHz to 20 GHz > 20 GHz to 40 GHz > 8 kHz to 50 MHz > 50 MHz to 2 GHz > 2 GHz to 8 GHz > 8 GHz to 20 GHz > 20 GHz to 40 GHz	0.05 dB 0.05 dB 0.05 dB 0.07 dB 0.15 dB 0.08 dB 0.08 dB 0.08 dB 0.09 dB 0.15 dB 1 dB 1 dB 1 dB 1.5 dB 1.9 dB	Connector: 2.92 mm ²⁾

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Alternating current Measuring devices	1 mV to 220 V	10 Hz to < 20 Hz	$0.40 \cdot 10^{-3} \cdot U + 8 \mu\text{V}$	U : Measuring value	
		20 Hz to 20 kHz	$0.21 \cdot 10^{-3} \cdot U + 4 \mu\text{V}$		
		> 20 kHz to 50 kHz	$0.20 \cdot 10^{-3} \cdot U + 8 \mu\text{V}$		
		> 50 kHz to 100 kHz	$0.50 \cdot 10^{-3} \cdot U + 16 \mu\text{V}$		
	1 mV to 22 V	> 100 kHz to 300 kHz	$1.0 \cdot 10^{-3} \cdot U + 18 \mu\text{V}$		
		> 300 kHz to 500 kHz	$1.8 \cdot 10^{-3} \cdot U + 20 \mu\text{V}$		
		> 500 kHz to 1 MHz	$4.0 \cdot 10^{-3} \cdot U + 20 \mu\text{V}$		
	> 22 V to U_{max}	> 100 kHz to 300 kHz	$1.0 \cdot 10^{-3} \cdot U + 16 \text{mV}$		$U_{\text{max}} = \frac{2,2 \cdot 10^7 \text{V} \cdot \text{Hz}}{f}$
		> 300 kHz to 500 kHz	$5.0 \cdot 10^{-3} \cdot U + 30 \text{mV}$		
		> 500 kHz to 1 MHz	$8.0 \cdot 10^{-3} \cdot U + 80 \text{mV}$		
	> 220 V to 1000 V	15 Hz to 50 Hz	$0.40 \cdot 10^{-3} \cdot U + 2.5 \text{mV}$		
		> 50 Hz to 1 kHz	$0.11 \cdot 10^{-3} \cdot U + 2.5 \text{mV}$		
	1 mV to 3.5 V	10 Hz to 30 Hz	$3.3 \cdot 10^{-3} \cdot U + 4 \mu\text{V}$		Voltage at 50 Ω
		> 30 Hz to 120 Hz	$1.6 \cdot 10^{-3} \cdot U + 4 \mu\text{V}$		
> 120 Hz to 120 kHz		$1.3 \cdot 10^{-3} \cdot U + 4 \mu\text{V}$			
> 120 kHz to 2 MHz		$1.5 \cdot 10^{-3} \cdot U + 5 \mu\text{V}$			
> 2 MHz to 10 MHz		$3.5 \cdot 10^{-3} \cdot U + 5 \mu\text{V}$			
> 10 MHz to 20 MHz		$11.0 \cdot 10^{-3} \cdot U + 5 \mu\text{V}$			
> 20 MHz to 30 MHz		$25.0 \cdot 10^{-3} \cdot U + 15 \mu\text{V}$			
> 30 MHz to 50 MHz		$40.0 \cdot 10^{-3} \cdot U + 15 \mu\text{V}$			
Sources	1 mV to 10 mV	10 Hz to 20 kHz	$0.5 \cdot 10^{-3} \cdot U + 4 \mu\text{V}$		
		> 20 kHz to 50 kHz	$0.8 \cdot 10^{-3} \cdot U + 4 \mu\text{V}$		
		> 50 kHz to 100 kHz	$5.0 \cdot 10^{-3} \cdot U + 4 \mu\text{V}$		
		> 100 kHz to 1 MHz	$12.0 \cdot 10^{-3} \cdot U + 10 \mu\text{V}$		
	> 10 mV to 100 V	10 Hz to 20 kHz	$0.5 \cdot 10^{-3} \cdot U + 2 \mu\text{V}$		
		> 20 kHz to 50 kHz	$0.5 \cdot 10^{-3} \cdot U + 2 \mu\text{V}$		
		> 50 kHz to 100 kHz	$1.4 \cdot 10^{-3} \cdot U + 2 \mu\text{V}$		
	> 10 mV to 10 V	> 100 kHz to 300 kHz	$4.0 \cdot 10^{-3} \cdot U + 2 \mu\text{V}$		
		> 300 kHz to 1 MHz	$11.0 \cdot 10^{-3} \cdot U + 10 \mu\text{V}$		
	> 100 V to 700 V	10 Hz to 20 Hz	$0.8 \cdot 10^{-3} \cdot U + 2 \text{mV}$		
		> 20 Hz to 50 kHz	$1.4 \cdot 10^{-3} \cdot U + 2 \text{mV}$		
		> 50 kHz to 100 kHz	$3.2 \cdot 10^{-3} \cdot U + 2 \text{mV}$		

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Direct current Measuring devices	0 A to 10 μ A		1 nA	/: Measuring value	
	> 10 μ A to 100 μ A		$0.10 \cdot 10^{-3} \cdot I$		
	> 100 μ A to 0.22 A		$0.10 \cdot 10^{-3} \cdot I$		
	> 0.22 A to 2.2 A		$0.14 \cdot 10^{-3} \cdot I$		
	> 2.2 A to < 3 A		$0.41 \cdot 10^{-3} \cdot I$		
Sources	3 A to < 11 A		$0.55 \cdot 10^{-3} \cdot I + 500 \mu$ A		
	0 A to 1 μ A		1 nA		
	> 1 μ A to 100 μ A		$0.10 \cdot 10^{-3} \cdot I$		
	> 100 μ A to 100 mA		$0.10 \cdot 10^{-3} \cdot I$		
	> 100 mA to 1 A		$0.20 \cdot 10^{-3} \cdot I$		
Alternating current Measuring devices	> 1 A to 60 A		$0.20 \cdot 10^{-3} \cdot I$		
	100 μ A to 220 μ A		10 Hz to 20 Hz		$0.3 \cdot 10^{-3} \cdot I + 16$ nA
	> 220 μ A to 2.2 mA				$0.3 \cdot 10^{-3} \cdot I + 40$ nA
	> 2.2 mA to 22 mA				$0.3 \cdot 10^{-3} \cdot I + 400$ nA
	> 22 mA to 220 mA				$0.3 \cdot 10^{-3} \cdot I + 4$ μ A
	100 μ A to 220 μ A		> 20 Hz to 1 kHz		$0.2 \cdot 10^{-3} \cdot I + 10$ nA
	> 220 μ A to 2.2 mA				$0.2 \cdot 10^{-3} \cdot I + 35$ nA
	> 2.2 mA to 22 mA				$0.2 \cdot 10^{-3} \cdot I + 350$ nA
	> 22 mA to 220 mA				$0.2 \cdot 10^{-3} \cdot I + 3.5$ μ A
	> 220 mA to 2.2 A				$0.2 \cdot 10^{-3} \cdot I + 35$ μ A
	100 μ A to 220 μ A		> 1 kHz to 5 kHz		$0.3 \cdot 10^{-3} \cdot I + 12$ nA
	> 220 μ A to 2.2 mA				$0.22 \cdot 10^{-3} \cdot I + 110$ nA
	> 2.2 mA to 22 mA				$0.22 \cdot 10^{-3} \cdot I + 550$ nA
	> 22 mA to 220 mA				$0.22 \cdot 10^{-3} \cdot I + 3.5$ μ A
	> 220 mA to 2.2 A				$0.47 \cdot 10^{-3} \cdot I + 80$ μ A
	100 μ A to 220 μ A		> 5 kHz to 10 kHz		$1.1 \cdot 10^{-3} \cdot I + 0.1$ μ A
	> 220 μ A to 2.2 mA				$1.2 \cdot 10^{-3} \cdot I + 1$ μ A
	> 2.2 mA to 22 mA				$1.2 \cdot 10^{-3} \cdot I + 5$ μ A
	> 22 mA to 220 mA				$1.2 \cdot 10^{-3} \cdot I + 10$ μ A
	> 220 mA to 2.2 A				$7.1 \cdot 10^{-3} \cdot I + 160$ μ A
	> 2.2 A to < 3 A		10 Hz to 45 Hz		$2 \cdot 10^{-3} \cdot I + 100$ μ A
			> 45 Hz to 1 kHz		$0.7 \cdot 10^{-3} \cdot I + 100$ μ A
			> 1kHz to 5 kHz		$6.6 \cdot 10^{-3} \cdot I + 1$ mA
			> 5 kHz to 10 kHz		$28 \cdot 10^{-3} \cdot I + 5$ mA
	3 A to < 11 A		45 Hz to 100 Hz		$0.7 \cdot 10^{-3} \cdot I + 2$ mA
	> 100 Hz to 1 kHz	$1.1 \cdot 10^{-3} \cdot I + 2$ mA			
	> 1 kHz to 5 kHz	$33 \cdot 10^{-3} \cdot I + 2$ mA			

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Sources	100 µA to 1.2 mA	10 Hz to 20 Hz	$6.0 \cdot 10^{-3} \cdot I + 0.1 \mu\text{A}$	
		> 20 Hz to 45 Hz	$3.5 \cdot 10^{-3} \cdot I + 0.1 \mu\text{A}$	
		> 45 Hz to 10 kHz	$2.6 \cdot 10^{-3} \cdot I + 0.1 \mu\text{A}$	
	> 1.2 mA to 120 mA	> 10 Hz to 20 Hz	$6.0 \cdot 10^{-3} \cdot I + 1 \mu\text{A}$	
		> 20 Hz to 45 Hz	$3.2 \cdot 10^{-3} \cdot I + 1 \mu\text{A}$	
		> 45 Hz to 10 kHz	$2.3 \cdot 10^{-3} \cdot I + 1 \mu\text{A}$	
	> 120 mA to 1 A	10 Hz to 20 Hz	$6.0 \cdot 10^{-3} \cdot I + 1 \mu\text{A}$	
		> 20 Hz to 45 Hz	$3.3 \cdot 10^{-3} \cdot I + 1 \mu\text{A}$	
		> 45 Hz to 5 kHz	$2.7 \cdot 10^{-3} \cdot I + 1 \mu\text{A}$	
		> 5 kHz to 10 kHz	$4.7 \cdot 10^{-3} \cdot I + 1 \mu\text{A}$	

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Phase noise Oscillators, Measuring devices	> -77 dBc/Hz ^{a)}	1 Hz ^{b)}	1.5 dB	Carrier frequency: 100 MHz to 500 MHz	
	-85 dBc/Hz to -77 dBc/Hz	1 Hz	2.5 dB		
	> -92 dBc/Hz	3 Hz to 10 Hz	1.5 dB	^{a)} Phase noise relative to carrier frequency with dBc/Hz	
	-100 dBc/Hz to -92 dBc/Hz	3 Hz to 10 Hz	2.5 dB		
	> -106 dBc/Hz	10 Hz to 100 Hz	1.5 dB		
	-114 dBc/Hz to -106 dBc/Hz	10 Hz to 100 Hz	2.5 dB		
	> -136 dBc/Hz	100 Hz to 1 kHz	1.5 dB		
	-146 dBc/Hz to -136 dBc/Hz	100 Hz to 1 kHz	2.5 dB		
	> -160 dBc/Hz	1 kHz to 10 kHz	1.5 dB		
	-168 dBc/Hz to -160 dBc/Hz	1 kHz to 10 kHz	2.5 dB		
	> -167 dBc/Hz	10 kHz to 100 kHz	1.5 dB		
	-175 dBc/Hz to -167 dBc/Hz	10 kHz to 100 kHz	2.5 dB		
	> -174 dBc/Hz	100 kHz to 1 MHz	1.5 dB	^{b)} Offset frequency Relative to carrier frequency	
	-182 dBc/Hz to -174 dBc/Hz	100 kHz to 1 MHz	2.5 dB		
	> -186 dBc/Hz	1 MHz to 10 MHz	1.5 dB		
	-192 dBc/Hz to -186 dBc/Hz	1 MHz to 10 MHz	2.5 dB		
	-64 dBc/Hz	1 Hz	1.5 dB		Carrier frequency: 500 MHz to 1 GHz
	-73 dBc/Hz to -64 dBc/Hz	1 Hz	2.5 dB		
	-82 dBc/Hz	3 Hz to 10 Hz	1.5 dB		
	-90 dBc/Hz to -82 dBc/Hz	3 Hz to 10 Hz	2.5 dB		
	-95 dBc/Hz	10 Hz to 100 Hz	1.5 dB		
	-103 dBc/Hz to -95 dBc/Hz	10 Hz to 100 Hz	2.5 dB		
	-123 dBc/Hz	100 Hz to 1 kHz	1.5 dB		
	-131 dBc/Hz to -123 dBc/Hz	100 Hz to 1 kHz	2.5 dB		
	-153 dBc/Hz	1 kHz to 10 kHz	1.5 dB		
	-161 dBc/Hz to -153 dBc/Hz	1 kHz to 10 kHz	2.5 dB		
-170 dBc/Hz	10 kHz to 100 kHz	1.5 dB			
-178 dBc/Hz to -170 dBc/Hz	10 kHz to 100 kHz	2.5 dB			
-172 dBc/Hz	100 kHz to 1 MHz	1.5 dB			
-180 dBc/Hz to -172 dBc/Hz	100 kHz to 1 MHz	2.5 dB			
-172 dBc/Hz	1 MHz to 10 MHz	1.5 dB			
-180 dBc/Hz to -172 dBc/Hz	1 MHz to 10 MHz	2.5 dB			
	-55 dBc/Hz	1 Hz	1.5 dB	Carrier frequency: 1 GHz to 3 GHz	
	-67 dBc/Hz to -55 dBc/Hz	1 Hz	2.5 dB		
	-67 dBc/Hz	3 Hz to 10 Hz	1.5 dB		
	-79 dBc/Hz to -67 dBc/Hz	3 Hz to 10 Hz	2.5 dB		
	-85 dBc/Hz	10 Hz to 100 Hz	1.5 dB		
	-93 dBc/Hz to -85 dBc/Hz	10 Hz to 100 Hz	2.5 dB		
	-114 dBc/Hz	100 Hz to 1 kHz	1.5 dB		
	-122 dBc/Hz to -114 dBc/Hz	100 Hz to 1 kHz	2.5 dB		
	-146 dBc/Hz	1 kHz to 10 kHz	1.5 dB		
	-155 dBc/Hz to -146 dBc/Hz	1 kHz to 10 kHz	2.5 dB		
	-166 dBc/Hz	10 kHz to 100 kHz	1.5 dB		
-174 dBc/Hz to -166 dBc/Hz	10 kHz to 100 kHz	2.5 dB			

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Phase noise Oscillators, Measuring devices	-168 dBc/Hz	100 kHz to 1 MHz	1.5 dB	Carrier frequency: 1 GHz to 3 GHz
	-176 dBc/Hz to -168 dBc/Hz	100 kHz to 1 MHz	2.5 dB	
	-168 dBc/Hz	1 MHz to 10 MHz	1.5 dB	
	-76 dBc/Hz to -168 dBc/Hz	1 MHz to 10 MHz	2.5 dB	
	-49 dBc/Hz	1 Hz	1.5 dB	Carrier frequency: 3 GHz to 6 GHz
	-57 dBc/Hz to -49 dBc/Hz	1 Hz	2.5 dB	
	-62 dBc/Hz	3 Hz to 10 Hz	1.5 dB	
	-70 dBc/Hz to -62 dBc/Hz	3 Hz to 10 Hz	2.5 dB	
	-76 dBc/Hz	10 Hz to 100 Hz	1.5 dB	
	-84 dBc/Hz to -76 dBc/Hz	10 Hz to 100 Hz	2.5 dB	
	-105 dBc/Hz	100 Hz to 1 kHz	1.5 dB	
	-113 to -105 dBc/Hz	100 Hz to 1 kHz	2.5 dB	
	-138 dBc/Hz	1 kHz to 10 kHz	1.5 dB	
	-146 to -138 dBc/Hz	1 kHz to 10 kHz	2.5 dB	
	-156 dBc/Hz	10 kHz to 100 kHz	1.5 dB	
	-164 to -156 dBc/Hz	10 kHz to 100 kHz	2.5 dB	
	-158 dBc/Hz	100 kHz to 1 MHz	1.5 dB	
	-166 to -158 dBc/Hz	100 kHz to 1 MHz	2.5 dB	
	-158 dBc/Hz	1 MHz to 10 MHz	1.5 dB	
	-166 to -158 dBc/Hz	1 MHz to 10 MHz	2.5 dB	
	-54 dBc/Hz	1 Hz	1.5 dB	Carrier frequency: 6 GHz to 8 GHz
	-62 dBc/Hz to -54 dBc/Hz	1 Hz	2.5 dB	
	-68 dBc/Hz	3 Hz to 10 Hz	1.5 dB	
	-76 dBc/Hz to -68 dBc/Hz	3 Hz to 10 Hz	2.5 dB	
	-95 dBc/Hz	10 Hz to 100 Hz	1.5 dB	
	-103 to -95 dBc/Hz	10 Hz to 100 Hz	2.5 dB	
	-122 dBc/Hz	100 Hz to 1 kHz	1.5 dB	
	-130 to -122 dBc/Hz	100 Hz to 1 kHz	2.5 dB	
	-138 dBc/Hz	1 kHz to 10 kHz	1.5 dB	
	-146 to -138 dBc/Hz	1 kHz to 10 kHz	2.5 dB	
	-142 dBc/Hz	10 kHz to 100 kHz	1.5 dB	
	-146 to -142 dBc/Hz	10 kHz to 100 kHz	2.5 dB	
-142 dBc/Hz	100 kHz to 1 MHz	1.5 dB		
-150 to -142 dBc/Hz	100 kHz to 1 MHz	2.5 dB		
-142 dBc/Hz	1 MHz to 10 MHz	1.5 dB		
-150 to -142 dBc/Hz	1 MHz to 10 MHz	2.5 dB		

Abbreviations used:

CISPR Comité international spécial des perturbations radioélectriques
 CMC Calibration and measurement capabilities

¹⁾ The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.